CATALOGUE 309

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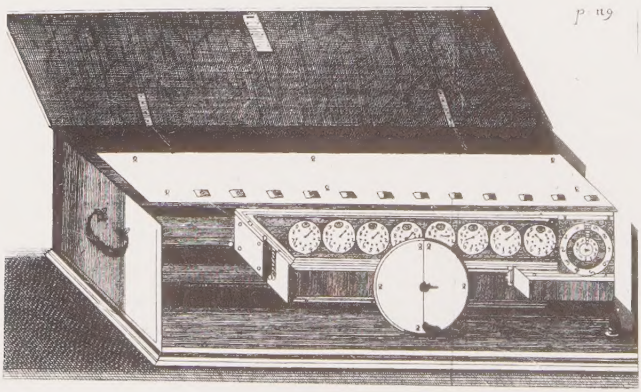
Illustration on front-cover from the original pen and wash drawing by Johann Melchior Füssli (1677–1736) for J. J. Scheuchzer's monumental Physica Sacra which was published in 1731. From the author's collection.

PRINTING AND THE PROGRESS OF MAN

A SERIES OF CATALOGUES
PART XV

One of the First Technological Books of Modern Times
Agricola's Berckwerck Buch
– No. 3 –



Ancestor of Modern Computer
Leibniz's Invention in Use Until Electronic Revolution in 1970's
– No. 140 –

From Crystals to Computers

Rare Books & Papers
In the Histories of
Crystallography, Electricity, Geology
Metallurgy, Mining
Electronics, Technology,
Neurology
etc. etc. etc.

CATALOGUE 309

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CATALOGUE 309
(Compiled by Walter Alicke)

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This constellation of rare books and papers in the histories of

Crystallography – Geology – Mineralogy – Technology –
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etc. etc.

on which the catalogue is based, may seem unfamiliar to the layman and to those unfamiliar with the historical development of microelectronics and its complicated machinery. Not so for the specialist.

The godfathers of our PCs and other thinking machinery are:

Quantum Theory
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Cristallography
Surface Chemistry & Physics
Metallurgy
Microscopic Mechanics
Electrotechnology
and several others

The building of modern high tech is being built, ". . . on the shoulders of giants . . ." (Newton).

W. A.

Die Wissenschaft ist der Verstand der Welt
die Kunst Ihre Seele (Ed. Murphy)

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1 ADLER, IRVING. Thinking Machines. A Layman's Introduction to Logic, Boolean Algebra, and Computers. With diagrams by Ruth Adler. 189 (+ 1 blank) pp. 8vo. Orig. cloth.

London, 1965. 125.–

SECOND EDITION, first published in 1961. A fresh copy.

A Pioneer of Glaciology – Foundation of Glacial Geology

2 AGASSIZ, LOUIS-JEAN-RODOLPHE. Untersuchungen über die Gletscher. (Translated by Agassiz himself and Carl Vogt). 2 volumes (text & atlas-volume). Illustrated by 32 fullpage very large original lithographs of which 18 are printed in two colours. XII, 326 pp. & errata leaf. Tall-8vo and folio. Contemporary cloth and half calf (for the atlas; with its fine illustrated yellow printed wrapper bound in).

Solothurn, Privatly printed for the Author [Gassmann], 1840–1841. 8500.–

FIRST EDITION in a well preserved copy, fresh and clean.

This is the German parallel edition published simultaneously with the French edition – there is no priority to either one. Agassiz wished for this his greatest and with loving care prepared work the widest possible distribution and wanted above all to reach the important German audience – the leading in the world of his days in science (see the lengthy description in my catalogue *Printing and the Progress of Man 269, 8).*

Made curious by the notion of other scientists that glaciers are moving, Agassiz decided to examine matters for himself. During successive journeys in the alpine regions during the years 1836 to 1837 he began to investigate thoroughly the structure and movements of the glaciers, their moraines, their influence in grooving and rounding the rocks over which they had travelled, etc. when he found such grooved rocks in areas where no glaciers had ever existed in the memory of man and combined with the fact that moraines and erratic boulders scattered in the plain of Switzerland must have been carried there by ice, Agassiz came to the conclusion that glaciers not only moved but must once have covered the whole of north-west Switzerland. He termed this geological period the *ice age* and despite strong opposition to this theory upon publication in this splendidly illustrated work (which he financed himself, hence the rarity of the work, having been published in a small edition only), further investigations in Scotland and Ireland only confirmed his conclusions. – *A fine fresh copy and very rare!*

Dibner, Heralds of Science No. 98; Horblit, 100 Books Famous in Science, No. 1 (Horblit's own copy was sold at auction, London, summer 1974, for sFrs. 11 000.–, in a poor copy!!); Geikie, Founders of Geology, pp. 443 ff.

One of the First Technological Books of Modern Times

3 AGRICOLA, GEORG. Berckwerck Buch: Darin nicht Allain alle Empter Instrument Gezeug und alles so zu diesem handel gehörig mit figuren vorgebildet und klärlich beschriben . . . Titlepage printed in red and black. Illustrated by 269 original woodcuts (some fullpage) and a folding plate of a compass by Basilius Wefring, splendidly engraved by RUDOLF MANUEL DEUTSCH. 4 unn. leaves, 491 (+ 1 blank) pp., 3 unn. leaves. Folio. Contemporary vellum.

Frankfurt am Main, Peter Schmidt for Sigmundt Feyerabend, 1580. 16 800.–

SECOND GERMAN EDITION of the first systematic treatise on mining and metallurgy and one of the first technological books of modern times. A well preserved copy.

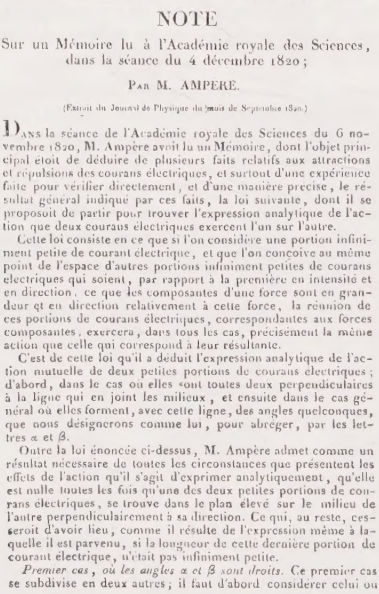
This was the book which started the entire library of the former President of the United States, Herbert Clark Hoover (1874–19), who, together with his wife Lou Henry, did the very first translation into English of Agricola's classic in 1912. Hoover's famous collection, The Bibliotheca De Re Metallica, is now housed in Claremont Colleges in California. The fine catalogue of the library is an often used and cited bibliographic tool.

The DE RE METALLICA-Berckwerck Buch – embraces everything connected with the mining industry and metallurgical processes, including administration, prospecting, the duties of officials and companies and the manufacture of glass, sulphur and alum. Some of the most important sections are those on mechanical engineering and the use of the water-power, the prime energy source in the centuries before the first industrial revolution caused by the introduction of the intensified water-power: the steam engine. Further there are sections on hauling, pumps, ventilation, blowing of furnaces (air-conditioning), transport of ores, etc. showing a very elaborate technique operated by craftsmen which resamble Gartenzwerge.

Originally published in Latin 1556, not long after Copernicus, Vesalius, Fuchs and Conrad Gessner had published their epoch-making books, Agricola's book was immensly influential for two centuries, and it has become a most important source for understanding those exciting times. It is a masterpiece of Renaissance technical writing and technical illustration.

Besides some insignificant small worm holes in upper margin here and there and leaves R6 and S3 with small marginal restorations, a well preserved and clean copy with the bookplates of Friedrich Wilhelm Graf von Schlabrendorff and Ladislao Redi.

Hoover Catalogue 23; Printing and the Mind of Man 79 and Horblit, One Hundred Books Famous in Science, 2b, list first Latin edition; Ferguson I, 10; Dibner, Agricola on Metals, 26; Partington II, 47; Wolf, History of Science, pp. 486–524.



NOTE

Sur un Mémoire lu à l'Académie royale des Sciences, dans la séance du 4 décembre 1820;

PAR M. AMPERE.

(Extrait du Journal de Physique du mois de Septembre 1820.)

DANS la séance de l'Académie royale des Sciences du 6 novembre 1820, M. Ampère avoit lu un Mémoire, dont l'objet principal étoit de déduire de plusieurs faits relatifs aux attractions et répulsions des courans électriques, et surtout d'une expérience faite pour vérifier directement, et d'une manière precise, le résultat général indiqué par ces faits, la loi suivante, dont il se proposoit de partir pour trouver l'expression analytique de l'action que deux courans électriques exercent l'un sur l'autre.

Cette loi consiste en ce que si l'on considère une portion infiniment petite de courant électrique, et que l'on conçoive au même point de l'espace d'autres portions infiniment petites de courans électriques qui soient, par rapport à la première en intensité et en direction, ce que les composantes d'une force sont en grandeur et en direction relativement à cette force, la réunion de ces portions de courans électriques, correspondantes aux forces composantes, exercera, dans tous les cas, précisément la même action que celle qui correspond à leur résultante.

C'est de cette loi qu'il a déduit l'expression analytique de l'action mutuelle de deux petites portions de courans électriques; d'abord, dans le cas où elles sont toutes deux perpendiculaires à la ligne qui en joint les milieux, et ensuite dans le cas général où elles forment, avec cette ligne, des angles quelconques, que nous désignerons comme lui, pour abréger, par les lettres α et β.

Outre la loi énoncée ci-dessus, M. Ampère admet comme un résultat nécessaire de toutes les circonstances que présentent les effets de l'action qu'il s'agit d'exprimer analytiquement, qu'elle est nulle toutes les fois qu'une des deux petites portions de courans électriques, se trouve dans le plan élevé sur le milieu de l'autre perpendiculairement à sa direction. Ce qui, au reste, cesseroit d'avoir lieu, comme il résulte de l'expression même à laquelle il est parvenu, si la longueur de cette dernière portion de courant électrique, n'était pas infiniment petite.

Premier cas, où les angles α et β sont droits. Ce premier cas se subdivise en deux autres; il faut d'abord considérer celui où

The Electric Current – Original Offprint

5 AMPÈRE, ANDRÉ MARIE. Sur un Mémoire lu à l'Académie royale des Sciences, dans la séance du 4 décembre 1820. 4 pages. 4to. Original grey wrappers, uncut. Paris, Huzard-Courcier, 1820. 2200.–

FIRST EDITION – the exceedingly rare original offprint from the „Comptes Rendus".

The paper is an extract from Ampère's paper as published in the „Journal de Physique" the same year (please see my catalogue PRINTING AND THE PROGRESS OF MAN I, 258, no. 6). In this paper Ampère enunciated principles and laws which established the science of electro-dynamics and which are today the BASIS OF OUR EVERYDAY ELECTRICAL ENGINEERING.

Cf. Dibner, Heralds of Science, 62 & Ten Founding Fathers of Electricity, pp. 25 ff.; Horblit, 100 Books Famous in Science, 3a (all later editions); not listed in Wheeler-Gift!

Fundamental Paper in the History of Electricity

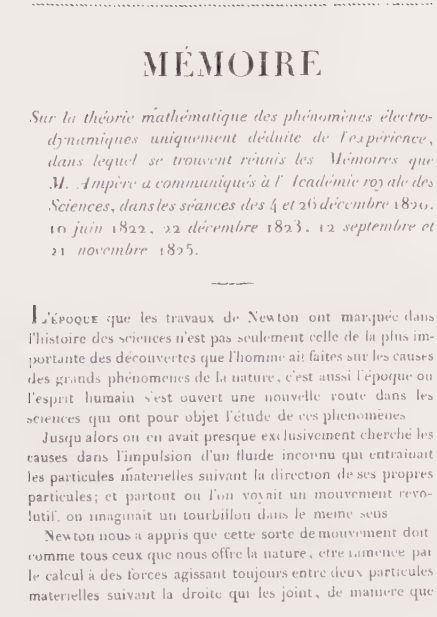
6 AMPÈRE, ANDRÉ MARIE. Expériences relatives à de nouveaux phénomènes électro-dynamiques. In: Annales de Chimie . . . volume XX, pp. 60–74 with an engraved folding plate. 8vo. Bound in modern boards, H. Horblit copy.

Paris, 1822. 2200.–

FIRST EDITION containing the general titlepage. A fine and fresh copy of an important paper.

„I have determined to use the word electrodynamics in order to unite under a common name all these phenomena . . ." (Ampère). To him the world of science owes a debt for his part in formulating the then little understood electrical phenomena into a measurable and corroborative body of experiments and theory. James C. Maxwell said it was one of the most BRILLIANT ARCHIEVEMENTS IN SCIENCE.

Dibner, Ten Founding Fathers of the Electrical Science, pp. 25 ff.; Horblit, 100 Books Famous in Science, his sale I, 33.



MÉMOIRE

Sur la théorie mathématique des phénomènes électro-dynamiques uniquement déduite de l'expérience, dans lequel se trouvent réunis les Mémoires que M. Ampère a communiqués à l'Académie royale des Sciences, dans les séances des 4 et 26 décembre 1820, 10 juin 1822, 22 décembre 1823, 12 septembre et 21 novembre 1825.

L'époque que les travaux de Newton ont marquée dans l'histoire des sciences n'est pas seulement celle de la plus importante des découvertes que l'homme ait faites sur les causes des grands phénomènes de la nature, c'est aussi l'époque où l'esprit humain s'est ouvert une nouvelle route dans les sciences qui ont pour objet l'étude de ces phénomènes.

Jusqu'alors on en avait presque exclusivement cherché les causes dans l'impulsion d'un fluide inconnu qui entraînait les particules matérielles suivant la direction de ses propres particules; et partout où l'on voyait un mouvement révolutif, on imaginait un tourbillon dans le même sens.

Newton nous a appris que cette sorte de mouvement dont comme tous ceux que nous offre la nature, être commence par le calcul à des forces agissant toujours entre deux particules matérielles suivant la droite qui les joint, de manière que

Principia of Electrodynamics

7 AMPÈRE, ANDRÉ MARIE. Mémoire sur la theorie Mathématique des Phénomènes Electro-Dynamiques uniquement déduite de l'éxperience, dans laquel se trouvent réunis les Mémoires que M. Ampère a communique à l'Académie Royale des Sciences, dans les séances des 4 et 26 Déc. 1820, 10 Juin 1822, 22 Déc. 1823, 12 Sept. et 21. Nov. 1825. In: Mémoires de l'Académie des Sciences, Paris, Series II, volume 6, 1823. Illustrated with 2 large engraved folding plates. 213 pp. 4to. Original blue printed wrappers.

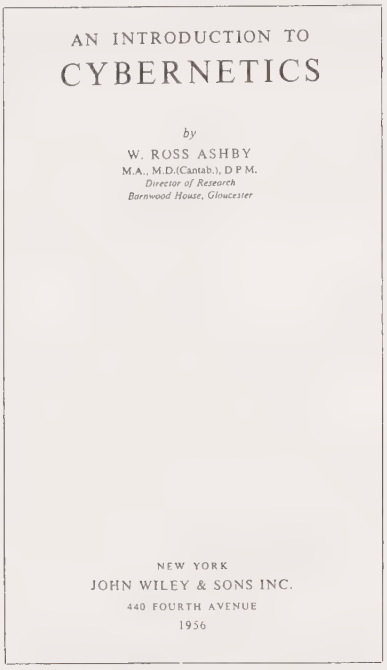
Paris, 1823 (1827). 3200.–

FIRST, ORIGINAL, EDITION in a well preserved, uncut and wide margined copy. ONE OF THE MOST IMPORTANT CONTRIBUTIONS TO SCIENCE OF ALL TIMES.

This is the original edition of the Mémoire-volume of 1823 and which was not published before 1827. In the meantime Ampère had his book off the press in November 1826, shortly before the present volume was mailed.

The papers offered in this volume illustrate the birth of a new science: *basis of our everyday elecrical engineering, one of the most brilliant achievements in science*, for the whole theory and experiment „has leaped fully grown and fully armed from the brain of the Newton of electricity, and summed up in fundamental formulae the *Basis of all Electro-Dynamics*" (James C. Maxwell).

Horblit, 100 Books famous in Science No. 3a; Mottelay p. 472; Dibner, Heralds of Science No. 62; Wheeler-Gift No. 2561.


AN INTRODUCTION TO
CYBERNETICS

by

W. ROSS ASHBY
M.A., M.D.(Cantab.), D P M.
Director of Research
Barnwood House, Gloucester

NEW YORK
JOHN WILEY & SONS INC.
440 FOURTH AVENUE
1956

Classic in Computerology

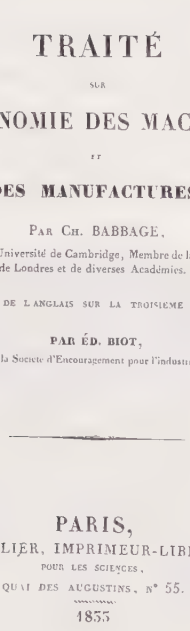
8 ASHBY, W. ROSS. An Introduction to Cybernetics. IX (+ 1), 295 (+ 1 blank) pp. 8vo. Original cloth.

New York, Wiley, 1956. 350.–

FIRST EDITION of one of the classics in the history of the development of the digital computer. A fine and fresh copy.

W. Ross Ashby wone first fame with his legendary „Design of a Brain" which was translated into many languages. The volume is divided into three parts of which the first part deals with the principles of mechanism, treating such matters as its representation by a transformation, what is meant by „stability", what is meant by „feedback". It introduces the principles that must be followed when the system is so large and complex (e. g. brain or society) that it can be treated only statistically.

Part two uses the methods develped in part one to study what is meant by „information", and how it is coded when it passes through a mechanism. It applies these methods to various problems in biology and tries to show something of the wealth of possible applications. It leads to *Shannon's theory*. Finally, part three deals with mechanism and information as they are used in biological systems for regulations and control, both in the inborn systems studied on physiology and in the acquired systems studied in psychology. It shows how hierarchies of such regulators and controllers can be built, and how an amplification of regulation is thereby made possible. It gives a new and altogether simpler account of the principle of ultrastability. It lays the foundation for a general theory of complex regulation systems, developing further the ideas of *Design for a Brain*.



TRAITÉ

SUR

L'ÉCONOMIE DES MACHINES

ET

DES MANUFACTURES;

PAR CH. BABBAGE,

Professeur à l'Université de Cambridge, Membre de la Société royale de Londres et de diverses Académies.

TRADUIT DE L'ANGLAIS SUR LA TROISIEME ÉDITION,

PAR ÉD. BIOT,

Membre de la Société d'Encouragement pour l'industrie nationale.

PARIS,

BACHELIER, IMPRIMEUR-LIBRAIRE

POUR LES SCIENCES,

QUAI DES AUGUSTINS, N° 55.

1833

A Landmark Book: Influencing Mill & Marx

9 BABBAGE, CHARLES. Traité sur l'économie des machines et des manufactures. Traduit de l'Anglais sur la troisième édition, par Éd. Biot. 2 unn. leaves, XVI, 515 (+ 1 blank) pp. Tall-8vo. Contemporary half calf, coloured spine label.

Paris, Bachelier, 1833. 880.–

FIRST FRENCH EDITION of this very influential treatise by, as the anglosaxon world maintains, the father of the modern computer, Charles Babbage (1792–1871). This is the most important edition because it is based on the original third edition which first contained the final text.

Together with John Herschel and others Babbage founded the Analytic Society in Cambridge, 1815. this was designed to emphasize the abstract nature of algebra, to bring new continental developments in mathematics to England and end the state of suspended animation in which British mathematicians had remained ever since the death of Newton a century before. It succeeded.

Babbage worked on what is now called „operations research" and advocated extreme division of labor in the factories, something Henry Ford almost a century later was to show could be made practical. In his famous work, Babbage's brilliant and original foray into political economy „On the Economy of Machinery and manufactures", he took Adam Smith's fundamental principle of economic growth and applied it to the individual firm. His obvious first-hand knowledge of a wide variety of industrial and business processes, combined with general analysis of production systems, made the work a tour de force. At a time of anxiety over the reception of new technology, he also offered authoritative policy statements on a wide range of machinery issues, incl. patent reform, export of machinery, crises of overproduction, and technological unemployment. In this he could be a contemporary of ours. The book's intellectual position in relationship to political economy was not however, easily apparent. Few apart from MILL AND MARX („Proletarians of all nations, Forgive me! Charlie Murx") appreciated its significance to their discipline. Chapter seven of the present work is devoted to „Des Machines à Compter, ou Compteurs".

A marginal dampstain in the first four and last two gatherings; a well preserved and nicely bound copy.

Berg, The Machinery Question and the Making of Political Economy, 1980; Kress 3015; McCulluch, pp. 240; Goldstine, The computer from Pascal to von Neumann, pp. 10 ff.; not listed in Randell's annotated Bibliography on the Origin of Computers, 1979.

The Nappes Theory

10 BAILEY, E. B. Tectonic Essays, mainly Alpine. With maps, charts and illustrations. XII, 200 pp. 8vo. Original cloth.

Oxford, 1935. 225.–

FIRST EDITION. A well preserved and fresh copy. The work represents the first applications by a Bristish geologist of the „Nappes Theory" to the Alps (de Beer).

Excellent Colour Plates of Minerals

11 BAKEWELL, ROBERT. An Introduction to Mineralogy; comprising the Natural History and Characters of Minerals; and a Description of Rocks . . . With a new tabular arrangement of earthy minerals . . . to which is prefixed . . . the elements of crystallography.

Illustrated by 4 engraved plates and an extra series of 54 beautifully handcoloured engraved plates in fine contemporary colouring. XX, 668 pp. Thick-8vo. Contemporary calf, spine renewed.

London, Longman etc., 1819. 2480.–

FIRST EDITION in a well preserved copy in which the contemporary previous owner of the volume has added this fine series of handcoloured plates depicting minerals.

Robert Bakewell (1768–1843) became interested in science, particularly geology, about the middle of his life. Perhaps this explains the emphasis in his works on presenting science to his readers in clear, simple language, but without undue popularization. During much of his life Bakewell lived in London, working as a mineralogical surveyor and teaching mineralogy and geology. His „Introduction to Geology", first published in 1813, was widely read and appreciated, largely because it used examples and illustrations taken from the english countryside. It went through several editions in England and in the USA. The „Introduction to Mineralogy" begins with the prophetic lines

„No circumstances more strikingly distinguishes civilised from savage nations, that the application of the productions of the mineral kingdom to the service of man, in the rudest stages of society the use of mineral substances being scarcely known . . ."

12

Concluding on page XVI:

„The history of the magnet should teach us not to dispise any discovery in science because its utility can not be immediately perceived . . .“

Well, looking at the glare on my PC's screen, 20th century's science has indeed done the most in applying the products from the mineral kingdom to our most civilized lives.

DSB I, 413; Ward & Carrozi, Geology Emerging, no. 100 (lists only the 1829 „Introduction to the Study of Mineralogy“).

Inscribed Copy
Beginning of the Third Industrial Revolution
The Invention of the Transistor

12 BARDEEN, JOHN & WILLIAM H. BRATTAIN. The Transistor, a Semi-Conductor Triode. (&) Nature of the Forward Current in Germanium Point Contacts.

And with:

SHOCKLEY, WILLIAM (&) GERALD PEARSON. Modulatin of Conductance of Thin Films of Semi-Conductors by Surface Charges. Three papers in: The Physical Review, volume 74, pp. 230–231; 231–232; 232–233. 4to. Original green printed wrappers.

Lancaster & New York, July 15, 1948.

And with:

BARDEEN, JOHN. In the Theory of the A–C Impedance of a Contact Rectifier. (&) Physical Principles Involved in Transistor Action (In Collaboration with William H. Brattain.) In: Bell System Technical Journal, volume XXXVII, pp. 428–434 (&) 239–277. 8vo. Contemporary cloth binding.

And with:

SHOCKLEY, WILLIAM. The Theory of p-n Junctions in Semiconductors and p-n Transistors. In the same journal, same volume, pp. 435–489.

New York, 1949.

And with:

BARDEEN, JOHN. Superconductivity: Past and Future. 1976–Scientist of the Year Lecture. Illustrated. 13 pages. 4to. Original pictorial wrappers.

No Place, 1976. 2200.–

FIRST & ORIGINAL EDITIONS OF ALL PAPERS of which the last one listed here is present in an offprint from „Industrial Research“ and which bears John Bardeen's autographed signature on the front-cover.

A solid-state device which is based on the action of junctions between semi-conductors with different electrical characteristics, and which can be used as an amplifier or rectifier for electrical signals. Because of their small size, robustness and safeness (since they operate at low voltages) transistors have virtually superseded thermionic valves as the principle electronic components in hi-fi, radio, television, and computers. They have also rendered practicable medical and surgical apparatus which could not otherwise have existed.

Without this invention there would have been no moon-landing, no PC and no industrial roboter and no discussion of job-sharing and no green movement.

John Bardeen (born 1908) and William Shockley (born 1910) were awarded the Nobel Prize for Physics in 1956 for their invention and for all the development work on semiconducting devices. Bardeen's other major achievement was in the successful development of the theory of superconductivity, for which he was awarded a second Nobel Prize in 1972.

Vorndran, Entwicklungsgeschichte des Computers, pp. 101 ff.; William, A History of Technology VII, pp. 1118–1119.

Refrigeration Anaesthesia – Chrystalline Structure of Snow

13 BARTHOLINUS, THOMAS. De nivis usu medico observationes variae. Accessit D. Erasmi Bartholini de figura nivis dissertatio cum operum authoris catalogo. Titlepage printed in red and black; illustrated by an engraved plate. 12 unn. leaves, 232 pp., 4 unn. leaves; 3 unn. leaves, 42 pp.; 8 unn. leaves. 8vo. Contemporary vellum.

Copenhagen, Matthias Godicchius & P. Haubold, 1661. 2800.–

FIRST EDITION of the famous volume in a well preserved copy although it is browned as always due to paper quality.

Erasmus Bartholinus (1616–1680), the celebrated Danish scientist, was one of the first to write about refrigeration anaesthesia. Chapter XXII of this historically important book makes the first known mention of the use of mixtures of ice and snow for freezing to produce surgical anaesthesia. The author states that the technique was taught to him by his teacher Marco Aurelio Severino of Naples. In order not to kill the tissues and cause gangrene, the ice-snow mixture was to be applied on the parts in narrow parallel line. After a quarter of an hour, feeling would be deadened and the part could be cut without pain. This may be the first mention of such a technique since the time of Avicenna but the method did not come into widespread use until the Russians used it in the Finnish-Russian campaign of 1939–40.

The treatise on snow crystals which is added as well as a catalogue of Thomas Bartholin's work, is illustrated by an engraved plate depicting snow crystals. This treatise precedes Boyle's work on gems of 1672 by eleven years.

Cushing B 114; Honeyman Collection I, 225; Meisen, Prominent Danish Scientists, pp. 25 ff.; Martin, Heirs of Hippocrates, 326; Osler 1933; Robinson, Victory over Pain, pp. 40, 298 ff.; Waller 726; Wellcome II, 107.

Pioneering Work in Early Photography

14 BECQUEREL, EDMOND. La lumière, ses causes et ses effets. 2 tomes, in two volumes. Illustrated with 8 large plates (4 coloured) and 76 woodcut illustrations in the text. 4, III (+ 1), 431, 3 pp.; 2, 377, 3 pp., 1 blank leaf. Large 8vo. Contemporary green half morocco, gilt decorated spines.

Paris, Firmin Didot, 1867–68. 1650.–

FIRST EDITION of this very important treatise in the history of photography. A well preserved copy.

Alexandre-Edmond Becquerel (1820–1891) did his most important work in optics on the phenomena of luminescence. In the middle years of the 19th century, he virtually monopolized the significant discoveries made in this field. His researches began in 1839 and culminated in the present monumental treatise in which he gathered all his previous papers published and unpublished. The first volume deals entirely with light emission, the second with photochemical action.

The most important advance in the progress of daguerreotypy regarding their sensitivity to light was made with the discovery that the complex combinations of silver iodine with their silver bromide or silver chloride, in the form of silver iodo-bromide, where much more sensitive to light than pure silver iodide. A discovery of the greatest value, not only in daguerreotypy, but for the talbotype and the wet collodion process of earlier years, as well as for the gelatine emulsions of today. The discovery of the partly equivalent und partly antagonistic action of the coloured rays of the solar spectrum on photographic silver salt layers was theoretically, and in some degree practically, important. Edmond Becquerel seems to have been the first person to observe that the latent daguerreotype image which had been underexposed could be intensified if re-exposed to the yellow and red rays of the spectrum and

THOMÆ BARTHOLINI
DE
NIVIS
Usu Medico
Observationes variæ.
Accessit
D. ERASMI BARTHOLINI
DE FIGURA NIVIS
Dissertatio;
cum
Operum Authoris Catalogo.

HAFNIÆ,
Typis Matthiæ Godicchii,
Sumptibus PETRI HAUBOLD, Bibl.
cIↃ IↃc LXI.

– No. 13 –

then developed with mercury. The secondary esposure under red glass supplements the original exposure. Explaining this phenomenon, Becquerel called the yellow-red rays continuing rays („rayons continuateurs") in contrast to the primary rays, which excited or produced the light image and which he called „rayons excitateurs" (exciting rays).

These phenomena are usually called the „Becquerel Phenomena" in photochemistry; they are dependent on the wave length of the light.

Also, Becquerel's results of the investigations on photochromy surpassed all those preceding them. He prepared his sensitive film by polishing a silver plate and immersing it in a metal perchloride solution or in chlorine water; a violet film of silver subchloride formed, which under the influence of coloured glass or of the spectrum takes on the impression received and which retains this colour photograph as long as subsquent light action is avoided.

For a detailed discussion of Becquerel's researches in luminescence see please Harvey's History of Luminescence, 1957. Eder, History of Photography, pp. 264–66; 664–7 etc.; DSB I, 555 ff.

15 BEER, AUGUST. Einleitung in die höhere Optik. Mit 212 in den Text eingedruckten Holzschnittten und 2 Tafeln mit 50 Abbildungen . . . XIV, 2, 430 pp. 8vo. Contemporary dark half calf with romantic gilt decorations.

Braunschweig, Vieweg, 1853. 350.–

FIRST EDITION in a well preserved copy.

August Beer (1825–1863), Professor of mathematics at the University of Bonn, first published in a journal 1852 the law which has been named after him, the Law of Beer, the law of the absorbation of light in coloured solutions. The volume includes a detailed description of the properties of light, the oscillation theory of light, the propagation, polarisation and transference of light.

This IMPORTANT TREATISE was translated into French in 1858 and in 1882 a second edition appeared to meet the demands of a waiting academic public.

Darmstädter, 532; Brit. Optical Ass. Catalogue 18–9.

Coal – The Alternative Energy Source

16 BEGRIFF, KURZER, VON STEINKOHLEN und derselben verschiedenen Arten und Eigenschaften nebst einer Anleitung zum vortheilhaftesten Gebrauch derselben. Mit einer Kupfertafel. 2, 68 pp. 8vo. Contemporary boards.

Prag, Calve, 1801. 265.–

FIRST EDITION in a well preserved copy. The name of the author remains anonymous, to the best of my knowledge.

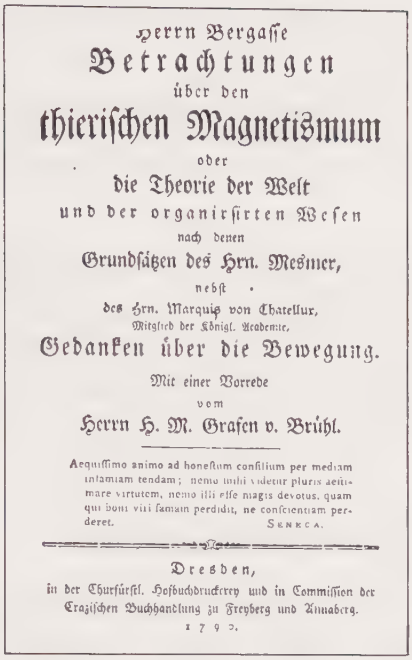
Not in Holzmann-Bohatta.

In Contemporary Green Morocco

17 BERGASSE, NICOLAS. Betrachtungen über den thierischen Magnetismus oder die Theorie der Welt und der organisierten Wesen nach denen Grundsätzen des Hrn. Mesmer, nebst des Hrn. Marquis von Chatellux . . . Gedanken über die Bewegung. Mit einer Vorrede vom Herrn H. M. Grafen von Brühl. 3 unn. leaves, XX pp., 2 unn. leaves, 146 pp., final blank leaf. Small-8vo. Fine contemporary green morocco, richly gilt decorated spine with a flower pattern, red lettering label; double gilt lines on covers; all edges gilt.

Dresden, Churfürstliche Hofbuchdruckerey, 1790. 1800.–

FIRST GERMAN EDITION of this famous volume which brought about the definite break between master and pupil who had become antagonists. A finely bound copy in the *rare contemporary green morocco.*



Herrn Bergaſſe
Betrachtungen
über den
thieriſchen Magnetismum
oder
die Theorie der Welt
und der organiſirten Weſen
nach denen
Grundſätzen des Hrn. Mesmer,
nebſt
des Hrn. Marquis von Chastellux,
Mitglied der Königl. Academie,
Gedanken über die Bewegung.
Mit einer Vorrede
vom
Herrn H. M. Grafen v. Brühl.

Aequiſſimo animo ad honeſtum conſilium per mediam infamiam tendam; nemo mihi videtur pluris aeſtimare virtutem, nemo illi eſſe magis devotus, quam qui boni viri famam perdidit, ne conſcientiam perderet. SENECA.

Dresden,
in der Churfürſtl. Hofbuchdruckerey und in Commiſſion der Crazischen Buchhandlung zu Freyberg und Annaberg.
1 7 9 0.

Nicolas Bergasse (1750–1832), a philosopher-lawyer-hypochondriac from a wealthy commercial family of Lyons, attached himself to Mesmer's tubs, at the usual price of 10 Louis d'or a month, in the spring of 1781. While Mesmer was living and working quietly in Spa, his friends and disciples were not submitting passively to the disredpute into which the Academy and the Medical Faculty were trying to plunge his theories. A group of his patients in Paris, under the leadership of Bergasse, were distributing an appeal to followers throughout France to urge his return to Paris. As the official Academy had refused to acknowledge Mesmer's scientific contribution, his disciples decided to found a special academy for the propagation of Mesmerism. Bergasse organized Mesmer's first twelve disciples into a society with an initiation fee of 100 Louis d'or per member. The Paris club, which by the end of 1781, consisted of 103 members, adopted the name „Society of Harmony". Soon twenty of these associations had been founded in France. All of them, modelled on the organisation of the Freemasons, swore their members to complete secrecy. Within a year 300 000 Louis d'or had been subscribed to facilitate the work when Mesmer returned to Paris.

The crashing failure of Rousseau's „Social Contract", raises a problem for scholars searching for the radical spirit in the 1780's. If the greatest political treatise of the age failed to interest many literate Frenchmen, what form of radical ideas did suit their tastes? One such form appeared in the unlikely guise of animal magnetism or mesmerism. Although it originally had no relevance whatsoever to politics, it became, in the hands of radical mesmerists like Nicolas Bergasse, a camouflaged political theory very much like Rousseau's.

The „Société de l'Harmonie", far from harboring a revolutionary cabal, provided a sort of fashionable parlor game for the wealthy and the well-bred and by the time of its schism, it had become flooded with aristocrats, eminent bourgeois, and even an academician, the Marquis de Chastellux, who wrote an essay published here in Bergasse's book. Such collaboration probably opened the doors to some fashionable salons, as Bergasse may have welcomed it, but his expulsion from Mesmer's Clubs slammed these doors shut and developed in him a revulsion against the fashionable mesmerism extending his fight against Mesmer and mesmerism into the larger battle against political despotism as documented in the present volume.

A FINE COPY IN AN UNUSUAL AND VERY RARE CONTEMPORARY GREEN MOROCCO BINDING.

Caillet 979; Darnton, Mesmerism and the End of Enlightenment in France, pp. 51–2, 75–8, 1280–5; Goldsmith, Mesmer, pp. 125 ff.

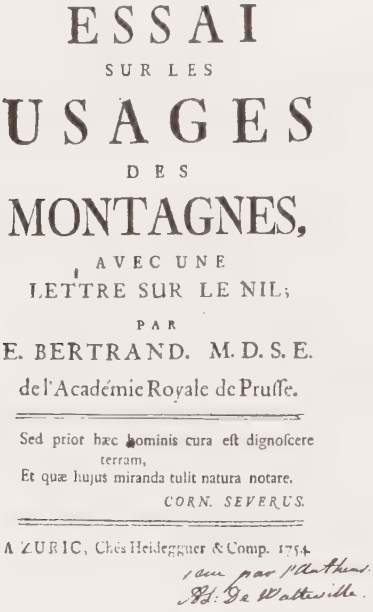
18 BERGMAN, TORBERN. Manuel du minéralogiste; ou Sciagraphie du règne minéral, distribuée d'après l'analyse chimique... Mise aujour par M. Ferber... et traduit et augmentée des notes par M. Mongez le Jeune... Nouvelle édition, considérablement augmentée par J. C. Delamétherie. 2 volumes. Illustrated with two engraved plates. 1 blank leaf, CXX, 359; 4, 443 pp. 8vo. Light brown half calf with two coloured spine labels.

Paris, Cuchet, 1792. 1650.–

MOST VALUABLE EDITION. The original edition of the Sciagraphia comprising merely 166 pages! The two plates illustrate, volume I: a blowpipe; volume II: minerals.

Bergman knew well how to make his chemical experiences useful for the definition and classification of minerals, and thereby laid the foundation of mineralogical chemistry and chemical geology. The Sciagraphia contains a chemical classification of minerals. – A fine and well preserved set; rare.

Partington III, pp. 184 ff; Moström, Bergmann Bibliographie No. 293.



ESSAI

SUR LES

USAGES

DES

MONTAGNES,

AVEC UNE

LETTRE SUR LE NIL;

PAR

E. BERTRAND. M. D. S. E.

de l'Académie Royale de Prusse.

Sed prior hæc hominis cura est dignoscere terram,
Et quæ hujus miranda tulit natura notare.
CORN. SEVERUS.

A ZURIC, Chés Heidegguer & Comp. 1754.

lu par l'Autheur
M. De Watteville.

Author's Presentation Copy
Large Paper Copy

19 BETRAND, ELIE. Essai sur les Usages des Montagnes avec une Lettre sur le Nil. XVI, 412 pp. Large 8vo. Original publishers boards, as issued, uncut.

Zürich, Heidegger & Co., 1754. 850.–

FIRST EDITION in a very fine and fresh copy printed on large paper, entirely uncut edges. Contemporary manuscript note on titlepage reads „recu par l'Autheur A. S. de Watteville".

Of particular importance in this classical volume of Alpine geological literature of the 18th century is chapter seventeen in which the author deals with the minerography of the Canton of Berne: „Wo in alphbatiescher Ordnung der Oerter des Cantons, die an jedem Ort findende Mineralien und

RECUEIL

DE

DIVERS TRAITÉS

SUR

L'HISTOIRE NATURELLE

DE LA TERRE

ET DES FOSSILES.

Par *M. F.* BERTRAND, *ci-devant premier Paſteur de l'Egliſe françoiſe de Berne, & Sécretaire de la Société Œconomique, maintenant Conſeiller de la Cour du Roi de Pologne; des Académies de Berlin, de Goettingue, de Suede, de Florence, de Leipſic, de Mayence, de Munich, de Lyon, de Nancy, de Bâle; des Sociétés d'Agriculture de Paris, de Lyon, de Rouen, de Dublin; &c. &c.*

A AVIGNON,

Chez *LOUIS CHAMBEAU*, Imprimeur-Libraire, près les RR. PP. Jéſuites.

M. DCC. LXVI.

Gesundwasser angemerkt werden. Eine Arbeit, die ganz neu, und sehr nützlich ist, indem diese Gegenden dem Scheuchzer grösstenteils unbekannt geblieben sind . . . man sieht die beträchtlichen und so wenig genützten Reichthümer unsres Landes . . ." (Haller).

Haller I, 1774; Studer, Geschichte der phys. Geographie, 365; Ward & Carozzi, Geology Emerging, No. 192.

First Minerography

20 BERTRAND, ELIE. Recueil de divers traités sur l'histoire naturelle de la terre et des fossiles. 4 unn. ll., 552 pp., 1 blank. ll. 4to. Contemporary half calf, richly gilt spine.

Avignon, Louis Chambeau, 1756. 1500.–

FIRST EDITION in a fine and fresh copy, entirely uncut and with very wide paper margins.

Elie Bertrand (1713–1797), von Orbe, und von Haus aus Pfarrer – so unter anderem auch an der französischen Kirche in Bern – führte lange Jahre für die ökonomische Gesellschaft die auswärtige Korrespondenz. Seine großen naturwissenschaftlichen Kenntnisse verschafften ihn die Ernennung zum Mitglied der Akademien Berlin, Göttingen, Leipzig, Basel, Stockholm, München, London und Florenz! 1765 ernannte ihn der Polenkönig Poniatowski (an ancestor of the French Minister in the d'Estaign government) zum geheimen Rat und lud ihn an seinen Hof ein. 1768 wurde Betrand der polnische Adel verliehen; doch er kehrte bald in die Heimat zurück und ließ sich in Yverdon nieder. Hier wurde er zu einem der bedeutendsten Gründer der ökonomischen Gesellschaft und der Stadtbibliothek.

Der Inhalt des vorliegenden Werkes ist in sechs Hauptteile gegliedert: Mémoires sur la structure intérieure de la terre – Essai sur les usages des montagnes – Mémoires historiques et physiques sur les tremblemens de terre – Essai d'une distribution methodique des fossiles – Essai de minérographie, et d'hydrographie du Canton de Berne – Lettre sur les inondations du Nil; et l'usage des montagnes de l'Abissinie – Lettre sur la diminution les mers, et l'origine des montagnes.

Ein Index am Schluß des Bandes erschließt dessen Inhalt. So schreibt Haller z. B. „uns aber interessiert besonders das Kapitel „Essai de la Minérographie, et de l'Hydrographie du Canton de Berne" wo in alphabetischer Ordnung der Orte des Cantons, die an jedem Ort findende Mineralien und Gesundwasser angemerkt werden. Eine Arbeit, die ganz neu, und sehr nützlich ist, indem diese Gegenden dem Scheuchzer größtentheils unbekannt geblieben sind. Sie bedarf noch einer großen Vermehrung, doch sieht man die beträchtlichen und so wenig genützten Reichtümer unsers Landes (der Gute kannte die Grünen noch nicht!)

Fueter, Exakte Wissenschaften SS. 132; Haller I, 1774; HBLS II, 205–206; Hoernes, Erdbebenkunde, SS. 79, 324; Wolf, Biographien III, SS. 237–8.

21 BERTRAND, LOUIS. Renouvellemens périodique des continens terrestres. Second édition, corrigée et considérablement augmentée. Illustrated by a large engraved folding plate. VIII, 406 pp. plus 1 errata-leaf Contemporary half calf.

Genève, J. J. Paschoud, 1803. 450.–

FRESH COPY PRINTED ON BETTER PAPER. Louis Bertrand (1731–1812) aus Genève, war Schüler und Freund Euler's. Er war von Haus aus Mathematiker und konkurrierte bereits 1752 mit *Trembley*) und *Louis Necker* um die Professur der Mathematik in Genf. Trembley erhielt den Posten; Bertrand ging nach Berlin, wohnte dort bei Euler und wurde Mitglied der Berliner Akademie der Wissenschaften.

Bertrand legte seine geologischen Ansichten, in deren Bearbeitung er die durch die Revolution in seinem Vaterland hervorgerufene Wirren zu vergessen suchte, im vorliegenden Werk nieder. Eine zweite Ausgabe erschien 1800 in Paris und eine weitere 1803 in Genf. Dieses Werk scheint eine Anzahl Vorträge zusammenzufassen, welche er bei früheren Anlässen gehalten hatte.

Inscribed by the Author

22 BIOT, JEAN-BAPTISTE. Sur les phénomènes rotatoires opérés dans le cristal de roche. OFFPRINT from the „Comptes Rendus, Acad. Roy. des Sciences, vol. XXI". 20 pp. 4to. Original blue wrappers.

Paris, 1845. 650.–

FIRST EDTION in an entirely uncut and unopened copy with wide paper margins. Jean Baptiste Biot (1774–1862) obtained an appointment as professor of physics at the Collège de France through the sponsorship of Laplace, whose self-centered soul he had pleased by offering to read proof on the colossal „Mécanique Céleste" and then actually doing it. In 1804 there seemed a heaven-sent opportunity to study the atmosphere with a balloon left over from Napoleon's Egyptian campaign. Biot and Gay-Lussac loaded themselves down with instruments, plus an assortment of small animals, and made an ascension. It was a tentative groping of science toward the upper atmosphere, a move that was to reach its climax in the rocketry of the mid-twentieth century.

Biot's most important work was in connection with what we call polarized light. He lived long enough to see Pasteur prove symmetry in organic crystals that has this twisting effect in polarized light, but not long enough to see the molecular symmetry he had predicted become an important facet of organic chemistry through the work of Van't Hoff and Le Bel.

DSB II, 133 ff.

Furnace for welding cracked bells Cupeling hearth with iron hood

– No. 23 –

Earliest Printed Book to Cover the Whole Field of Metallurgy

23 BIRINGUCCIO, VANNOCCIO. Pirotechnia. Li diece libri della Pirotechnia, nelliquali si tratta non solo la diversita delle minere, ma ancho quanto si ricer ca alla prattica di essere di quanto s'appartiene all'arte della fusione over getto de metalli, e d'ogni altra cosa a questa somigliante. With the fine woodcut border-titlepage and 88 woodcuts in the text. 4 unn. leaves, 167 num. leaves, final leaf with woodcut printer's device. 4to. Contemporary limp vellum.

Venice, Curtio Navo, 1550. 5600.–

SECOND EDITION of this great classical volume at the beginning of modern technology.

Among the highly skilled craftsmen of the Renaissance were those who worked with ores and metals. The author of this celebrated treatise, Vannoccio Biringuccio (1480–1539) from Siena, was a master craftsman in the practices of smelting and of metalworking. Contrary to the customs of the trade, Biringuccio was moved to impart his knowledge to all and thus he has given us the earliest handbook on metallurgy-in fact, the first printed book dealing with the applied metal arts and the processes of ore reduction. He described the technology that had been in course of development since to Bronce Age of western civilization. It was not until the coming of the Power Age at the end of the 18th century that progress was resumed in the science of which Biringuccio wrote more than 200 years before.

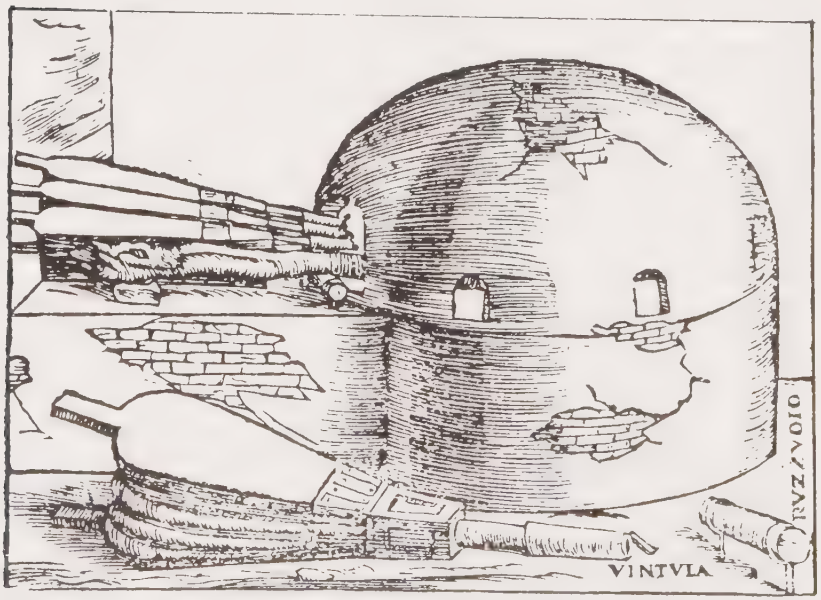
First and foremost the author stands out as the practical man, concerned with carrying out operations on metals for profit and for use. He realizes the advantages of large-scale operation and advices the use of power-driven machinery in place of hand labor whenever possible. The availability of adequate water power is the first thing to consider in establishing a smelter. Fuel and transportation are the next requisites. Biringuccio's work reflects an established capitalistic economy. In an amusingly naive justification of his profession on moralistic grounds, he recommends mining as a safer way than soldiering to acquire wealth and as a pleasanter one than that of the merchant with his unconfortable voyages to unfriendly foreign shores. He recommends short shifts in mining of six or eight hours and with that would have been an early darling of our trade unions.

Birincuccio can be credited with the first description in full working detail of many of the arts and processes in his field. His work is valuable primarily because it records the technical details of applied chemistry as practised in his day, but inseparable from his account of an early stage in the growth of an experimental science is the picture of the beginnings of industrial economy as it related to a most vital type of production. Here we have science working hand in hand with industrial organisation in beginning to produce a new society as we late 20th centurers would say. His work should be as valuable to the historian of economics as to the historian of science and technology.

Biringuccio's work was first publised in 1540, the year following the death of its author. This first edition is typographically much inferior to the following second edition, for the type was worn, poorly aligned, and arranged in a solid mass, unrelieved by paragraphing. Biringuccio was certainly very popular among men of his own kind, as attested by the fact that no fewer than nine editions of the PIROTECHNIA appeared over a period of 138 years. Men like Robert Hooke used it for practical information. Italian editions appeared over the centuries up to 1914; the first English in 1555, the first French edition in 1556; a first German translation was issued in 1925! A first complete English edition appeared as late as 1943!

A well preserved copy with an insignificant marginal damp stains in the second half of the volume.

Smith & Gnudi, The Pirotechnia of Biringuccio, pp. VII ff.; Dibner, Heralds of Science 38; Duveen 79; Harvard, Italian 16th Century Books I, 66; Hoover Collection 129; Partington, History of Chemistry II, 31–37; Von Braun & Ordway, History of Rocketry and Space Travel, p. 29, Philip, Bibliography of Firework Books, B 11.2.



German cupeling furnace with brick dome
Note valve on the bellows and
the roller to facilitate handling the logs

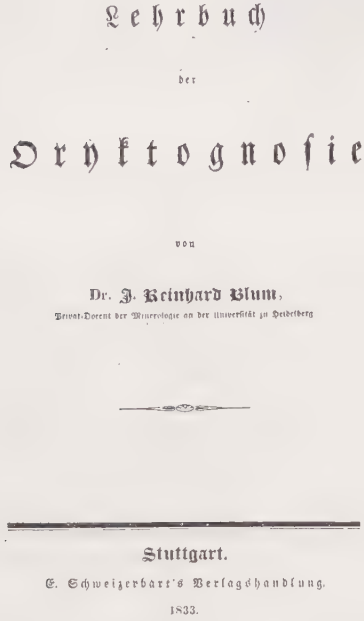
– No. 23 –

First Complete English Edition

24 BIRINGUCCIO. – SMITH, CYRIL STANLEY & MARTHA TEACH GNUDI. The Pirotechnia of Vannoccio Biringuccio. Translated from the Italian with an Introduction and Notes. Titlepage printed in red and black. With numerous illustrations. XXVI, 477 (+ 1) pp. Large 8vo. Original cloth, strong paper spine.

New York, 1943. 385.–

FIRST EDITION of the very first complete English Edition of this great classic in the history of metallurgy. It was printed in a limited edition of only one thousand copies. Biringuccio's work was the first comprehensive book on the fire-using arts and one of the classics in the history of science and technology. (Hoover)



Lehrbuch

der

Oryktognosie

von

Dr. J. Reinhard Blum,

Privat-Docent der Mineralogie an der Universität zu Heidelberg

Stuttgart.

E. Schweizerbart's Verlagshandlung.

1833.

25 BLUM, JOHANN REINHARD. Lehrbuch der Oryktognosie. With 261 illustrations in the text. 2, 509 (+ 1 blank) pp., 2 pp. publ. ads. Large 8vo. Original boards, printed spine lettering label.

Stuttgart, Schweizerbart, 1833. 385.–

FIRST EDITION of one of the most popular handbooks on mineralogy in the 19th century. It was published as an independent volume in the three volume series of „Naturgeschichte der drei Reiche". A second edition appeared in 1854.

A well preserved copy in its original binding; some occasional browning of the paper as usual.

Ward & Carozzi, Geology Emerging, listing only the second edition; not in Hoover, Zittel e. a.

D. GEORGII RVDOLPHI BOEHMERI
VNIVERSITATIS WITTEBERG. SENIORIS
BIBLIOTHECA
SCRIPTORVM
HISTORIAE NATVRALIS
OECONOMIAE
ALIARVMQVE ARTIVM AC SCIENTIARVM
AD ILLAM PERTINENTIVM
REALIS SYSTEMATICA
PARS IV.
MINERALOGI
VOLVMEN I.

LIPSIAE
APVD IOANNEM FRIDERICVM IVNIVM.
MDCCLXXXVIII.

PREFACE.

The following pages are presented to the public with many misgivings, and not until after long and serious thought. The author has yielded to the pressing solicitations of many kind friends, whose very flattering assurances have at last induced him to arrange in their present form, the results of a long lifetime of experience and observation, among the remarkable geological phenomena conspicuous in this peculiarly illustrative district. Any knowledge he may possess has been self-acquired, and amid his ordinary busy avocations he has contrived to snatch time for the prosecution of his favourite study, so that, with disadvantages unknown to his fellow-labourers in this part of the kingdom in point of learning, his work has been the more arduous and toilsome.

He has claimed the right of telling his story in his own humble way, otherwise he could not have been persuaded to assume the responsibility of authorship, and publish the accumulation of facts resulting from his long and personal acquaintance with every nook and corner of Furness. At the advanced age of 78 he cannot expect to see whether his contribution to the stores of his beloved science may be productive of any practical good to his native district, but he leaves his work with an indulgent public in the hope that his readers will give him credit for earnestness of purpose, and put down all his shortcomings in a literary sense to his inexperience as an author and to the overwhelming passion for a pursuit which has given intense pleasure during a privileged and lengthened existence.

Sedgwick Cottage, near Ulverston.

– No. 26 –

26 BOEHMER, GEORG RUDOLPH. Handbuch der Naturgeschichte, Oeconomie, etc. Theil IV: Mineralreich. 2 volumes bound in one volume. With two engraved title-vignettes. 510 pp.; 412 pp., final blank leaf. Thick-8vo. Contemporary half calf.

Leipzig, Joh. Friedrich, Junius, 1788. 1200.–

FIRST EDITION; exceedingly rare very extensive bibliography of mineralogy and allied subjects. Text in German and Latin. A good copy, fresh and clean inside; binding slightly rubbed but very sound.

27 BOLTON, JOHN. Geological Fragments Collected Principally from Rambles among the Rocks of Furness and Cartmel. Illustrated by woodcuts. VIII, 2, 264 pp Tall-8vo. Original green publisher's cloth.

Ulverston & London, 1869. 450.–

FIRST EDITION. A well preserved copy, top of spine with slight aberration.

Peak of Development in Modern Kinetic Theory of Gases

28 BOLTZMANN, LUDWIG. Vorlesungen über Gastheorie. 2 parts bound in 1 volume. VIII, 204 pp.; X, 265 (+ 3) pp. Tall-8vo. Contemporary half cloth, gilt lettering on spine.

Leipzig, Barth, 1896–1898. 1500.–

FIRST EDITION in a well preserved copy; exlibrary stamps on titlepage and half-title.

„After expending a large amount of effort in the 1880's on elaborate attempts to determine transport properties of gases, Boltzmann returned to the calculation of equilibrium properties in the 1890's. He was encouraged by the progress made by Dutch researchers – J. D. van der Waals, H. A. Lorentz, J. H. van't Hoff, and others – in applying kinetic methods to dense gases and osmotic solutions. He felt

obliged to correct and extend their calculations, as in the case of virial coefficients of gases composed of elastic spheres. The success of these applications of kinetic theory also gave him more ammunition for his battle with the energeticists." (DSB)

In 1948 Shannon introduced Boltzmann's entropy principle into communication science in his famous article „Mathematical Theory of Communication" (see item 226).

„This masterpiece of theoretical physics can rightly be considered the peak of development achieved in the modern kinetic theory of gases" (Stanitz)

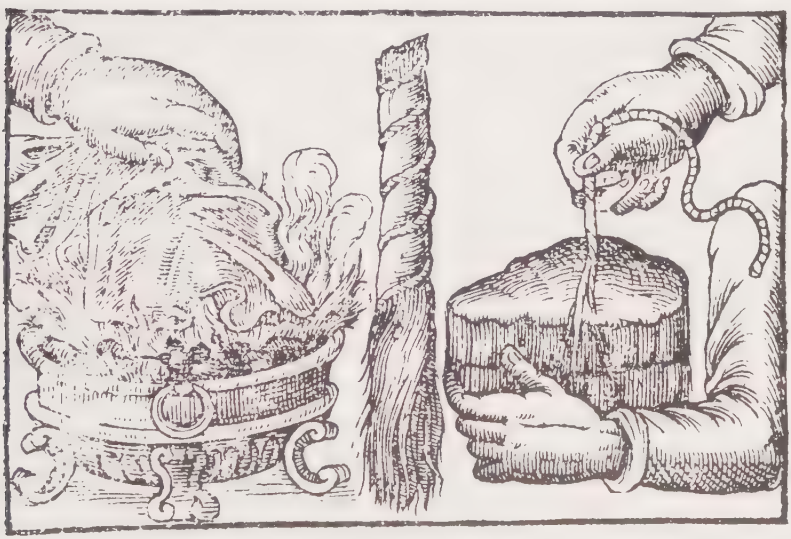
DSB II, 265; Sources of Science and Technology, 79.

Geology, Geognosie

29 BONNARD, A. H. DE. Essai géognostique sur l'Erzgebirge, ou sur les montagnes métallifères de la Saxe. Extrait du „Journal des Mines", nos. 226–228. 156 pp. 8vo. Original wrappers.

Paris, Bossange, 1816. 850.–

FIRST EDITION in the very rare author's offprint, uncut and unopened copy, top edge slightly staines. The Erzgebirge (metallmontain) is a metallurgical and geological very interesting part of Germany. It was from there that Röntgen and the Curies received their first uranium to experiment with. It is still today the most valuable uranium mine for Eastern Germany with the only difference, today they employ slave labour in the mines and the uranium mines are one of the most dreaded concentration camps with very low life expectency.



First Attempts of a Systematic Descritption of Minerals

30 BOODT, ANSELMUS BOETIUS DE. Gemmarum et Lapidum Historia. Postea Adrianus Tollius recensuit, figuris melioribus, & commentariis pluribus illustravit, & indice auxit multo locupletiore. Tertia editio . . . cum accedunt *Ioannis de Laet*, De Gemmis & Lapidibus libri II.

2 titles bound in 1 volume. Illustrated by 95 (+ 66) woodcuts in the text, 2 folding-out tables. 4 unn. leaves, 576 pp., 12 (last blank) unn. leaves; 32 unn. leaves, 210 pp., 3 unn. leaves. Thick-8vo. Contemporary vellum.

Leiden, Johann Maire, 1647. 2800.–

THIRD EDITION, like the second edition of 1636 also edited by Adrian Toll. A well preserved copy of this much sought after edition on account of the additional text by Laetius.

Anselmus Boetius de Boodt (ca. 1550–1632) from Bruges in Belgium had studied medicine at Heidelberg and obtained his M. D. in Padua following the habit of this time. He then went to Bohemia where he became eventually court physician to the Emperor Rudolph II. It was under the influence of Rudolf II. that Boodt began to collect minerals and to write his only book, the present treatise on gems and stones. He divided the minerals into great and small, rare and common, hard and soft, combustible and incombustible, transparent and opaque. He uses a scale of hardness expressed in three degrees and notes the crystalline forms of some minerals (triangular, quadratic and hexangular). Boodt criticizes some of the views of Aristotle, Pliny, Paracelsus, and others.

Boodt enumerates about 600 minerals that he knows from personal observation, and describes their properties, values, imitations, and medical applications. There are also *tables of values of diamonds* according to their size and a short description of the polishing on precious stones.

Johannes de Laet's (1593–1649) „De Gemmis et Lapidibus Libri II. . ." is the FIRST EDITION. It contains first an annotated translation of the work of Theophrastus „On Stones" from the original Greek into Latin, and then passes on to describe the more important „fossils". Theophrastus, a pupil of Aristoteles, wrote the only separate treatise on minerals and rocks that has come down to us from the Greeks. It remained for 1800 years a most valuable and authoritative work on minerals, referred to and quoted by all.

Adams, Birth and Development of Geological Sciences, pp. 163; DSB II, 292/3; Darmstädter, Steinbücher in Philobiblon VII, 1934, pp. 266 with 2 illustrations; Hoover Collection 146 (only 1636 ed.) and 499; Thorndyke VI, pp. 318–324; Ward & Carozzi, Geology Emerging, No. 253.

Ackeret

THE CRYSTALLINE STATE

EDITED BY

SIR W. H. BRAGG, O.M., K.B.E., D.Sc., F.R.S.

AND

W. L. BRAGG, D.Sc., F.R.S.

VOLUME I

A GENERAL SURVEY

BY

W. L. BRAGG

LONDON

G. BELL AND SONS LTD

1933

THE CRYSTALLINE STATE—VOL. II

Editor: SIR LAWRENCE BRAGG

THE OPTICAL PRINCIPLES

OF

THE DIFFRACTION OF X-RAYS

By

R. W. JAMES,

M.A., B.Sc., F.INST.P.

PROFESSOR OF PHYSICS IN THE UNIVERSITY OF CAPE TOWN

LONDON

G. BELL AND SONS LTD

1948

31 BRAGG, WILLIAM HENRY & WILLIAM LAWRENCE. The Crystalline State. I: A General Survey – II: The Optical Principles of the Diffraction of X-Rays by R. W. James. 2 volumes. Illustrated. XIV, 352 pp.; XV (+ 1), 623 (+ 1) pp. Tall-8vo. Original cloth.

London, Bell & Sons., 1933 & 1948. 450.–

FIRST EDITIONS of both volumes. A third volume was planned but as far as I could find out, was never published. From the library of Jakob Ackeret. Added is a collection of 20 original offprints by the two Braggs, father and son, from various scientific journals. A sample listing follows here:

1. Crystallography, 1923.
2. Intensity of Reflexion of X. Rays by Crystals (in colab. with Darwin, James), 1926.
3. The Structure of Certain Silicates (in colab. with J. West), 1927.
4. A technique for the X-Ray Examination of crystal structures with many parameters (in colab. with J. West), 1928.
5. The Determination of Parameters in Crystal Structures by means of Fourier Series, 1929.
6. X-Ray Optics, 1929.
7. Atomic Arrangements in the Silicates, 1929.
8. The Structure of Silicates, 1930.
9. The Structure of beta-Alumina (in colab. with Gottfried and West), 1931.
10. The New Crystallography, 1935.
11. L'Intensité de réflexion des rayons X, ca. 1930.
12. The History of X-Ray Analysis, 1948.

etc. etc. together ca. 350 pages.

Thanks to Max von Laue (See item No. 130) and his coworkers Knipping and Friedrich, the wave nature of X-Rays and the order of magnitude of their wavelength had been discovered and established. The photographic interference pictures taken by them were difficult to interprete in detail. The problem was taken up in several quarters, but it was mainly through the work of the William H. Bragg (1862–1942) and his son William Lawrence B. (1890–1971) that the phenomenon was qualitativeley elucidated and turned to account. The Braggs shared the Nobel Prize for Physics in 1915 for their services in the analysis of crystal structure by means of X-Rays.

Cf. PMM 406; Olby, The Path to the Double Helix, oo. 24, 255–56; Nobel, The Man and his Prize, 434 ff.

32 BRANDES, HEINRICH WILHELM. Lehrbuch der Gesetze des Gleichgewichts und der Bewegung fester und flüssiger Körper. 2 Theile in 2 volumes. Illustrated with 10 engraved folding plates. XVI, 255, 1 pp.; XVI, 330 pp., 2 unn. leaves „errata". 8vo. Contemporary, presumably original, boards.

Leipzig, P. G. Kummer, 1817–1818. 450.–

FIRST EDITION in a good set.

Heinrich Wilhelm Brandes (1777–1834) had studied natural sciences in Göttingen under A. G. Kästner and G. C. Lichtenberg and in 1811 he was apppointed professor of mathematics at Breslau and became professor of physics at Leipzig in 1826. As a student Brandes, with Benzenberg, developed a method of the corresponding observations of shooting stars. Later Brandes occupied himself with practical and theoretical problems of the refraction of rays and other problems of atmospheric optics, as well as with the theory of comet tails. His books were widely read and contributed much to the popularization of astronomy.

DSB II, 420-1.

33 BRIOT, CHARLES AUGUSTE. Essais sur la théorie mathématique de la lumière. XXII, 132 pp. 8vo. Original printed wrappers.

Paris, Mallet-Bachelier, 1864. 375.–

FIRST EDITION, uncut, somewhat stained copy of an important paper in the history of the theories of ether, light and waves.

Charles A. Briot (1817–1882) was professor of mathematics at the Sorbonne in Paris. His studies on light, heat and electricity were based on the hypothesis of the existence in the ether of imponderable molecules acting upon each other, as well as upon the ponderable molecules of matter. Particularly in his study of the crystalline medium, he linked his findings to Pasteur's experimental work on the dissymetrie of crystals. These studies, which were conducted from a mathematical point of view, led to the simplification of methods for integral calculus and the advance of the theories of elliptic and Abelian functions. To honor him for this work, the Göttingen Academy of Science named him a corresponding member. His books became standard works which appeared in numerous editions for many decades to some and served as textbooks for the students.

Dictionary of Scientific Biography II, 470–1.

Early Spelaeology

34 BROWNE, G. F. Ice-Caves of France and Switzerland. A Narrative of Subterranean Exploration. With 13 woodcuts in the text. VIII, 2, 315 (+ 1 blank) pp. 8vo. Original brown cloth binding.

London, Longman, 1865. 380.–

FIRST EDITION in a fresh and well preserved copy. Browne's work is one of the very first accounts based on own observations and excursions and he remarks in the preface that „the existence of natural ice-caves at depth varying from 50 to 200 feet below the surface of the earth, unconnected with glaciers or snow mountains, and in latitudes and at altitudes where ice could not under ordinary circumstances be supposed to exist, has attracted some attention on the subject. These caves are so singular, and many of them so well repay inspection, that a description of the twelve which I have visited can scarcely, as it seems to me, be considered an uncalled-for addition to the numerous books of travel which are constantly appearing.

The vast library of Sir Gavin de Beer (see our HELVETICA CATALOGUES 246–248) did not contain a copy of Browne's work because of its rarity however, de Beer had a copy of the later published „Off the Mill. Some Occasional Papers" (1895) in which the author reports some later excursions to and in the ice caves of Switzerland.

Cauchy's Theory of Light

35 CAUCHY. – FRANZ XAVER MOTH. Über die Theorie des Lichtes. Nach einem lithographirten Memoire des Freih. Augustin Luis Cauchy frei bearbeitet. VIII, 120 pp. 8vo. Original grey printed wrappers.

Wien, Carl Gerold, 1842. 350.–

FIRST EDITION in a well preserved copy. An important study considering the fact that Cauchy's memoires and writings appeared in the publications of the Academy, in a few scientific journals. Some of them, which have been lithographed, are rare (DSB, p. 135) It is even not clear whether all of them have really existed. „Ich glaube den Besitzern von Cauchy's Werken und den Freunden der höheren Physik durch die freie Bearbeitung eines lithographierten Memoires, das nur in sehr wenigen Exemplaren vorhanden ist, und welches durch Cauchy's Freundschaft gegen mich zu meiner Kenntniss gelangte, einen angenehmen Dienst zu erweisen. Das betreffende Memoire enthält eine kurze Darstellung der allgemeinen Gleichungen, welche die Grundlage zu allen Untersuchungen über die besondern Phänomene des Lichtes ausmachen, und gibt eine gedrängte Zusammenstellung und eine succinkte Idee der Methoden und Resultate, worauf Cauchy in seinen Untersuchungen über die Theorie des Lichtes gekommen ist . . ." (Moth's preface, page VII).

Cf. Dict. of Sci. Biogr. III, 131 ff.; Brit. Opt. Ass. Cat., p. 147 (2641).

36 CHAPPELL, E. A New Method of Second Difference Integration on the Brunsviga-Dupla Machine.

And:

COMRIE, LESLIE JOHN. Note on Mr. Chappell's Method of Second Difference Integration. Offprints from: „Monthly Notices of the Roy. Astron. Soc., vol. XCI/7". 4 pp. 8vo. Original grey printed wrappers.

Edinburgh, 1931. 320.–

FIRST EDITIONS: Comrie states that Chappell's method of second difference integration in the first paper is by no means new; it had been in use in the Nautical Almanac Office for more than two years, particularly with a BURROUGHS CLASS II MACHINE, which printed all its results.

Comrie's paper with two manuscript corrections (by the author himself like in Mendel's famous 1866 paper?)

37 CHARPENTIER, JEAN DE. Essai sur les Glaciers et sur le terrain erratiquedu bassin du Rhône. Avec vignettes. Illustrated by 8 large original lithographic views and a large folding map „du terrain erratique de la vallée du Rhône". X, 363 pp. 8vo. Nice half calf.

Lausanne, Marc Ducloux, 1841. 1100.–

FIRST EDITION in a very fine fresh copy, complete with the fine coloured map and the 8 lithographed views. Jean de Charpentier (1786–1855) studied at the famous mining academy of Freiberg and was entrustet by the Vaudois government in 1813 with the management of the salt mines in Bex.

He was greatly interested for many years in glacial concepts and in 1835 he *established the glacial doctrine* on a firm basis by publishing a paper which attracted Agassiz's attention. Agassiz visited Charpentier in 1836, listened to his ideas, examined his evidence, and came away a convert to the glacial theory. When Agassiz published his famous „Etudes . . ." (see item no. 2) late in 1840, Charpentier's volume describing the glacial researches was almost ready for publication. Agassiz had freely acknowledged Charpentier's priority in the „Etudes sur les Glaciers", even dedicating the work to Charpentier. Fully aware of Charpentier's forthcoming publication. Agassiz migth have waited to publish his own work until his friend's book had appeared. Such priority would not have detracted from Agassiz's volume, since it alone contained the concept of the Ice Age. The result was that he lost a friend at the price of immortality for his own great work.

Lurie, Agassiz, pp. 102 ff.; Zittel, Geologie, pp. 226.

– No. 38 –

Second Coloured Geological Map Known to Exist
A Classic in Early Geological Literature

38 CHARPENTIER, JOHANN FRIEDRICH WILHELM. Mineralogische Geographie der Chursächsischen Lande. Mit Kupfern. Illustrated by a finely engraved frontispiece, engraved title-vignette, six large engraved and folding-out plates and a large folding-out engraved map in beautifully executed contemporary colouring. XLIV, XVI, 432 pp. 4to. Red half calf with gilt lettering on spine.

Leipzig, S. L. Crusius, 1778. 2800.–

FIRST EDITION of one of the classical volumes in the history of geological literature. A well preserved and complete copy with all the plates and the famous geological map, according to Geikie's Ten Founding Fathers of Geology, THE SECOND EARLIEST COLOURED GEOLOGICAL MAP KNOWN. Eight tints are used to discriminate granite, gneiss, schist, limestone, gypsum, sandstone, river-sand, clay and loam; and there are also symbols to point out the localities for basalt, serpentine, etc. It was Goethe himself who had revised and extended version of the map prepared, however, it was never published and is preserved in the Goethe-Nationalmuseum in Weimar, today.

Johann F. W. Toussaint de Charpentier (1728–1805), father of the glaciologist Jean de Charpentier (please see my catalogue BIBLIOTHECA HELVETICA XXI, 32 and the foregoing item), was professor at the famous mining school at Freiberg. In his Mineralogical Geography he gives an excellent description of the veins and other mineral occurrences of Saxony and some of the adjacent areas, and in the last few pages of the book the question of the probable origin of the ores is discussed. It is an admirable presentation of the facts gathered during his long years of mining experience. He considers in succession those facts which have a definite bearing on the question of the genesis of the ore deposits, and, based on them, he offers an excellent explanation of the origin of these deposits, which, he says, cannot be considered as more than a conjecture but which he believes represents the closest, approximation to the truth attainable at that time.

Charpentier was shadowed by A. G. Werner's supreme method of teaching; however, both, Goethe and von Leonhard did much to put Charpentier's advantages into right focus.

Fischer, Mineralogie in Sachsen, 272–3; Geikie, Ten Founding Fathers of Geology, 451 ff.; Adams, Birth and Development of the Geological Sciences, pp. 313 ff.; Ward & Carozzi, Geology Emerging, 473. Schmid, Goethe und die Naturwissenschaften, 293.

Important Contribution to 19th Century Physics

39 CLAUSIUS, RUDOLF. Ueber den zweiten Hauptsatz der mechanischen Wärmetheorie. Ein Vortrag... 4, 17 (+ 1 blank) pp., 2 pp. publ. ads. 8vo. Original printed wrappers.

Braunschweig, 1867. 580.–

FIRST EDITION of an important paper on the second law of thermodynamics.

Clausius had introduced the concept of ENTROPY into the scientific lexicon two years earlier with his paper „Ueber verschiedene für die Anwendung bequeme Formen der Hauptgleichungen der mechanischen Wärmetheorie". At that time, and plainly once again here, Clausius minimizes and ignores the contributions of Rankine to the development ot the second law, which so it appears, were of no great and far reaching effect anyway.

In Clausius's terms the idea of entropy was broken down into two functions with distinct mechanical meaning. It is this that is so beautifully stated in the present paper.

Garber, Historical Studies in the Physical Sciences, II; Daub in: Isis volume 57, 2933 ff.; DSB III, 302 ff.

40 CLIFFORD, HARRY E. & ALEXANDER H. WING & E. L. CHAFFEE (EDITORS). Electronic Circuits and Tubes. By the Electronics Training Staff of the Cruft Laboratory, Harvard University. Illustrated by numerous text-figures. XXIV, 948 (+ 2 blank) pp. Large 8vo. Original cloth, gilt lettering on spine.

New York & London, 1947. 350.–

FIRST EDITION. A well preserved copy from the library of Professor J. Ackeret. This book has developed from the lecture notes of a special wartime training cours and presents the basic of electronic tubes and electronic circuits employed in conjunction with those tubes. The emphasis on the applications in the fields of communication and electronic control. Much hitherto unpublished material is given in various chapters; material which fell under the wartime secrets act and material which the other side would have loved to lay hands on; after all RADAR won the war!

Laying Solid Foundations for Computational Revolution

41 COMRIE, LESLIE JOHN. The Application of Calculating Machines to Astronomical Computing. Offprint from „Popular Astronomy XXXIII/4". 4 pp. Tall-8vo. Original grey printed wrappers.

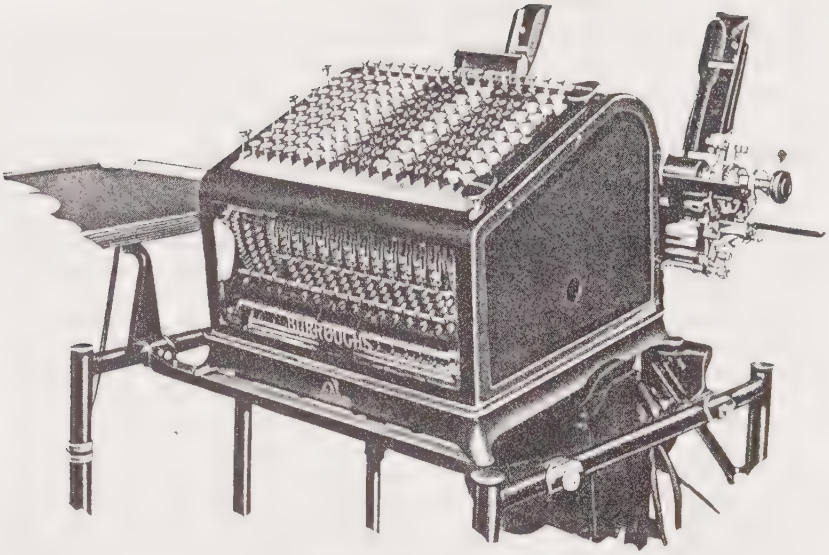
No place, 1925. 850.–

ORIGINAL EDITION of a key item in the history of computation. A well preserved copy; tear in lower stich repaired.

Leslie J. Comrie (1893–1950), a second generation New Zealander, taught astronomy for three years in the USA (Swarthmore and North Western). In 1930 he became superintendend of the NAUTICAL ALMANAC which he completely revised after it had been left almost unchanged since 1834. After disagreement with the Admiralty, Comrie left astronomy to found the Scientific Computing Service. He laid a solid foundation for the computational revolution that was to follow the introduction of the electronic computer: he showed how to program commercial machines for scientific computation; developed impeccable interpolation techniques; produced mathematical tables of the highest standards of accuracy and presentation; and, in effect, created computational science.

Comrie, with no claim to be a mathematician, had the clarity of mind, tenacity of purpose, scientific courage, and immense energy that enabled him, by using essentially simple and direct methods, to obtain practical solutions to many problems that defined theoretical analysis. His main contributions were made in the years 1925 to 1936.

DSB III, 373 ff.



General View of the Machine.

Substantial Paper

42 COMRIE, LESLIE JOHN. The Nautical Almanac Office Burroughs Machine. Illustrated by two fullpage-sized plates and 3 illustrations in the text. OFFPRINT from the „Monthly Notices of the R. A. S., vol. 92/6". 20 pp. Tall-8vo. Original grey printed wrappers.

Edinburgh, 1932. 850.–

FIRST EDITION in a fine fresh copy of this substantial and well illsutrated account of Comrie's pioneering work in applying the mechanical adding machine to scientific work. He used a Burroughs Machine and the method of calculating differences to compute and print astronomical tables.

William Burroughs, born 1855, spent considerable time as a boy working in an Auburn, N. Y., bank. He was appalled at the inaccuracies built into the hand accounting system. When he moved to St. Louis because of ill health, he went to work in a machine shop. He put together a working model of a printing adding machine, patented it in 1888, and then convinced a group of local businessmen to put up $ 100000 to support a company to manufacture his machines. By 1891, when Hollerith was mechanizing the census, Burroughs had produced fifty machines. Burroughs health did him in just before his business took off; he died of tuberculosis in 1898. His company was soon building and selling 5000 machines a year, and by 1913 it dominated the manufacture of office equipment. The Burroughs Corporation is still in business, deeply involved in computers.

Shurkin, Engines of the Mind, p. 74 ff.

Enormously Complicated Problem

43 COMRIE, LESLIE JOHN. The Application of the Hollerith Tabulating Machine to Brown's Tables of the Moon. Illustrated by 3 plates and 11 text figures. OFFPRINT from the „Monthly Notices of the R. A. S., vol. 92, 7". 16 pp. Tall-8vo. Original grey printed wrappers.

Edinburgh, 1932. 750.–

FIRST EDITION in a fine and fresh copy.

After his work with the Burroughs calculator (see the previous item), Comrie went to work adopting the Hollerith punch card machine to determine the positions of the moon, an enormously complicated problem. He worked out the moon's position for every twelve hours from the years 1935 to 2000 by punching 20 million holes in a half a million Hollerith cards. This took seven months. In the present paper Comrie describes the facilities and operation of then current punches, tabulators and sorters, and the use of these for calculating Brown's Tables of the Moon, a handbook for all moon travellers. Comrie states that Hollerith equipment was first used at the Nautical Almanac Office in 1929.

Shurkin, Engines of the Mind, p. 75; Randell, Annotated Bibliography on the origin of Computers, 119.

44 COMRIE, LESLIE JOHN. Inverse Interpolation and Scientific Application of the National Accounting Machine. With 3 fullpage-sized plates. OFFPRINT from the „Splt. to the Journal of the Roy. Statist. Soc., vol. III/2". 28 pp. 8vo. Original blue printed wrappers.

London, 1936. 685.–

FIRST EDITION, printed for private circulation in a small number of copies. Comrie's introduction to the section dealing with the use of the National accounting machine surveys the history of special-purpose difference engines, and indicates his preference for using standard commercially-available equipment.

Randell, Annot. Bibliography on the Origins of Computers. 120.

The Heavy Stuff

45 COMRIE, LESLIE JOHN. The Application of the Brunsviga Twin 13 Z Calculating Machine to the Hartmann Formula for the Reduction of Prismatic Spectrograms. Illustrated by one plate. OFFPRINT from „The Observatory, vol. 60". 4 pp. 8vo. Original blue wrappers.

London, 1937. 450.–

FIRST EDITION in a fine copy.

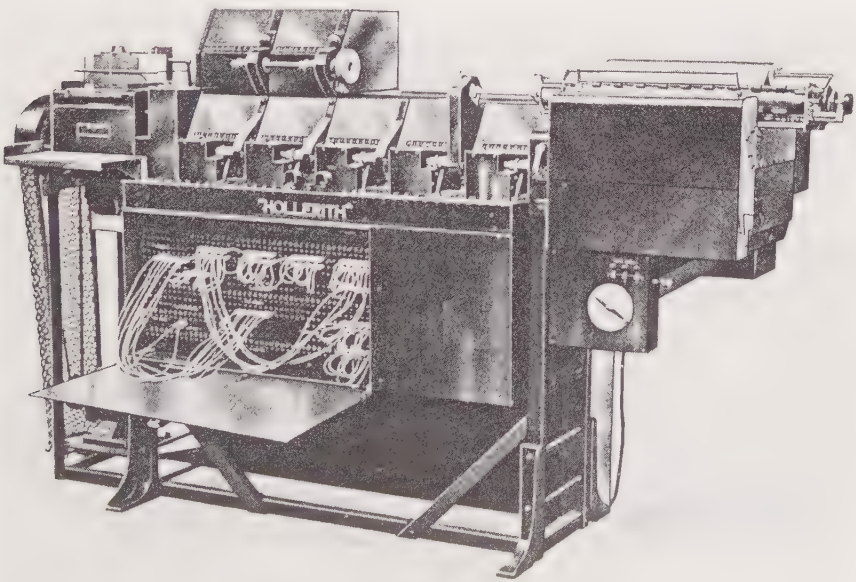


FIG. 6.—*Tabulator.*

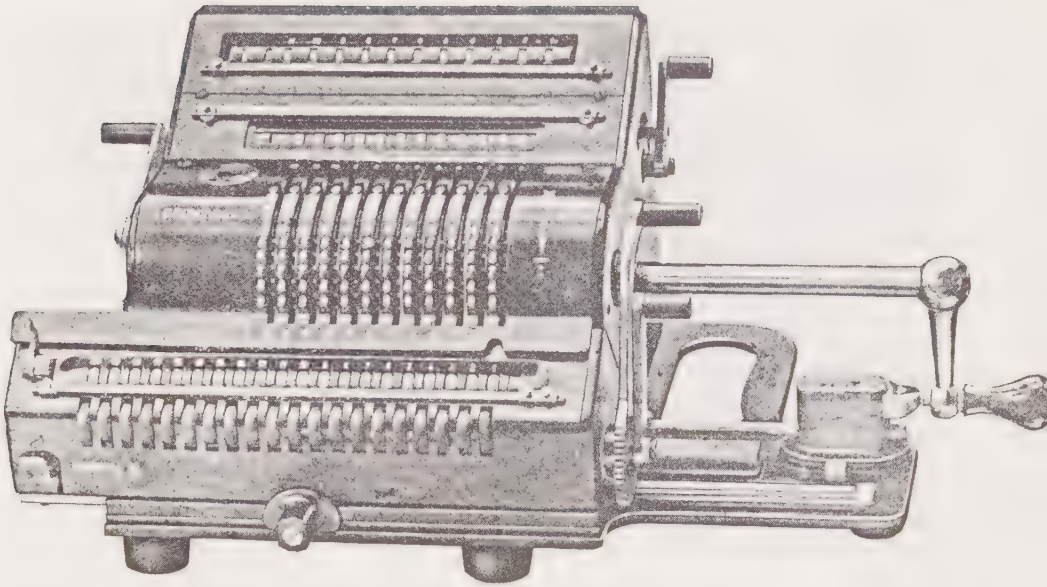
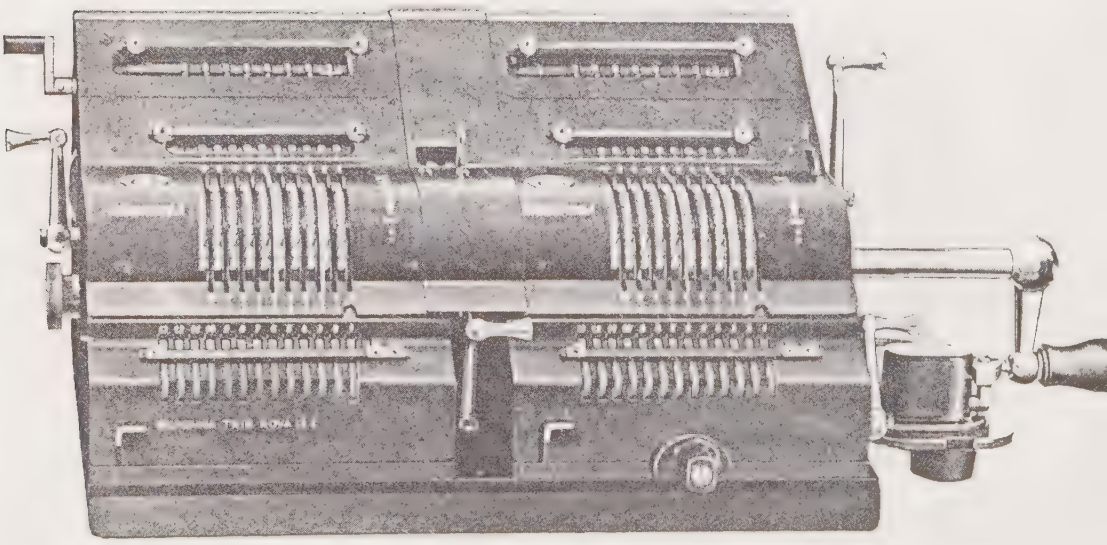


Fig. 1.— Brunsviga Calculating Machine, Model 20.

– No. 44 –



Brunsviga Twin 13 Z Calculating Machine.

– No. 45 –

„A mechanical method of computing wave-lengths from the Hartmann formula is developed. Full advantage is taken of the constancy of three of the elements in the formula, while all wirting and mental work are eliminated" states Comrie in the summary of his paper.

Not listed in Randell's bibliography.

COMRIE, LESLIE JOHN & E. CHAPPELL. A new method of second difference integration on the Brunsviga-Dupla Machine . . . Please see under Chappell, item no. 36

Forerunner of Darwin in Germany

46 COTTA, BERNHARD. Geologische Briefe aus den Alpen. Illustrated with an engraved frontispiece and 5 lithographed maps (of which one is double-page spread) all in contemporary colouring. VIII, 328 pp. 8vo. Contemporary half calf.

Leipzig, T. O. Weigel, 1850. 760.–

FIRST EDITION in a well preserved copy.

Carl Bernhard von Cotta (1808–1879) was not only an important geologist in his own time but also, due to his synthesizing abilities, in later eras; he was rightly called the philosopher of geology in a time of increasingly detailed research. Son of Heinrich Cotta, the founder of the world famous Tharandt Forestry Academy near Dresden, studied geology at the celebrated Freiberg Bergakademie. He eventually became professor at both institutions were he taught for 32-years, longer than all his predecessors and successors. Cotta traveled extensively and wrote reports on all his trips. He was an ardent defender of the concept of evolution even in the inorganic realm. In the 20th century Hans Stille revived Cotta's concepts and raised them to a new level by connecting Cotta's continuous, but always new and differently determined, variability by means of a tectonic earth history divided into phases. Thus Cotta became the forerunner of Darwin in Germany and, as early as 1848, i. e. 18-years before Haeckel, expressed the basic biogenetic law.

DSB III, 433 ff.; NDB III, 381.

Fourth State of Matter

47 CROOKES, WILLIAM. On Attraction and Repulsion resulting from Radiation (from no. II:) On Repulsion from Radiation. Complete series of papers I to VI. Offprints from: Philosophical Transactions, 1874, pt. 2, pp. 501–527; 1875, pt. 2, pp. 519–547; 1876, pt. 2, pp. 326–376 (= 3rd & 4th paper); 1878, pt. 1, pp. 243–318; 1879, pt. 1, pp. 97–134. Illustrated with numerous woodcuts in the text, full page plates (of which one is coloured). Large 4to. Contemporary cloth.

London, 1874–1879. 12 papers: 2200.–

BOUND WITH:

CROOKES, WM. On the Illumination of Lines of Molecular Pressure and the Trajectory of Molecules. Off-print from „Philos. Trans.", 1879, pt. 1, pp. 135–164. With Illustrations.

AND WITH:

CROOKES, WM. Contributions to Molecular Physics in High Vacua. Magnetic Deflation of Molecular Trajectory. Laws of Magnetic Rotation in High and Low Vacua... Off-print, same journal, 1879, pt. 2, pp. 641–662. Illustrated.

AND WITH:

SCHUSTER, SIR ARTHUR. On the Nature of the Force producing the Motion of a Body exposed to Rays of Heat and Light. Offprint from same journal, 1876, pt. 2, pp. 715–724.

AND WITH:

REYNOLDS, OSBORNE. On the Forces caused by the communication of Gas; and on a new Photometer. Off-print from same journal, 1876, pt. 2, pp. 725–735. Illustrated.

AND WITH:

MAXWELL, JAMES CLERK. On Stresses in Rarified Gases arising from Inequalities of Temperature. Off-print from same journal, 1879, pt. 2, pp. 231–256.

AND WITH:

REYNOLDS, OSBORNE. On Certain Dimensional Properties of Matter in the Gaseous State. Part I: Experimental Researches on Thermal Transpiration of Gases through Porous Plates and on the Laws of Transpiration and Impulsion . . . Part II: On an Extension of the Dynamical Theory of Gas . . . Off-print from same journal, 1879, pt. 2, pp. 727–845. Illustrated.

Twelve papers bound in one large quarto volume.

FIRST EDITIONS OF EACH OF THE TWELFE PAPERS, PRESENT HERE IN THE RARE OFF-PRINT FORM, with a separate title page to all but the first and the second papers. A well preserved series and very rare.

William Crookes (1832–1919), later Sir William, studied the cathode rays extensively in the seventies of the last century. Besides showing that the rays could be focused by a concave cathode, much as light would be, he showed that they could make a light object with vanes, delicately supported between points, rotate of they hit the vanes on one side of the axis only: Crookes famous radiometer, or as he called it first, „light mill". Crookes had been studying „radiometer action", the effects obtained when gas at a very low pressure causes the rotation of a similiar vaned rotor when this is enequally heated. He believed that the cathode rays were molecules which became electrified negatively by striking the cathode and then repelled from it, and he speakes of lines of molecular pressure. He was ONE OF THE FIRST people to study gases at pressures so low that a molecule had a good chance of crossing the vessel without hitting another gas molecule on the way. His researches on this subject culminated in the FAMOUS CLASSICAL PAPER, presented in the Bakerian Lecture for 1878 (first item), in which he analyzed the changes in the appearance of the discharge with the gases varying in pressure. As the degree of vacuum increased, Crookes observed that a dark area was formed around the cathode and that it expanded with higher vacua, soon called the „Crookers Dark Space". Regarding the cathode rays as streams of molecules moving in specific directions, as shown by the expansion of a dark space, he concluded that higher vacuum offered less resistance to the stream of rays.

At the end of the famous Bakerian lecture Crookes said: „the phenomena in these exhausted tubes reveal to physical science a new world – A WORLD WHERE MATTER MAY EXIST IN A FOURTH STATE." This may seem prescient of the electron, as radiant matter turned out to be. Until Thomson's demonstrations of the electron in 1897 (please see part 4), Crookes theory was bringing to light a new world of science and led directly to Hertz's famous researches and great achievements and of course to ROENTGEN'S GREAT DISCOVERY and our entry into the atomic age. *(see item no. . . .)*

The collection of Crookes's classical papers is rounded up by the equally important papers by Sir Arthur Schuster (1851–1934), Osborne Reynolds (1842–1912) and last not least, James Clerk Maxwell (1831–1879).

Schuster, while investigating the passage of electricity through gases, was THE FIRST TO SHOW THAT AN ELETRIC CURRENT passes through a gas by means of gaseous ions and concluded that cathode rays are gaseous ions accelerated in the strong field near the cathode. He had been led to this particular investigation by the earlier experiments of Crookes with the radiometer.

The two papers by Reynolds, who had collaborated in Schuster's experiments with Crookes's radiometer, are interlinked with the researches of Crookes.

It remained for Maxwell to discuss the theory of Crooke's beautiful instrument and to give a mathematical investigation of this action, based on the kinetic theory of gases.

Wheeler-Gift Nos. 3995, 3996, 3997 (Crookes); 3955 (Maxwell); Dibner, Heralds of Science, No. 160 – The Rays of Professor Roentgen, pp. 9 ff.; Glasstone, Sourcebook on Atomic Energy, pp. 28 ff.; Harvey, History of Luminescence, pp. 412 ff.

THE BAKERIAN LECTURE.

ON THE

ILLUMINATION OF LINES OF MOLECULAR PRESSURE

AND THE

TRAJECTORY OF MOLECULES.

BY

WILLIAM CROOKES, F.R.S., &c.

From the PHILOSOPHICAL TRANSACTIONS OF THE ROYAL SOCIETY.—PART I. 1879.

LONDON:

PUBLISHED FOR THE ROYAL SOCIETY

BY TRÜBNER AND CO., LUDGATE HILL, E.C.

1879.

Fine Book on Crafts & Arts
The Practicing Metallurgist

48 DER CURIEUSEN KUNST- UND WERCK-SCHUL Erster (& Anderer) Theil 2 volumes. First title printed in red and black. Illustrated by an engraved frontispiece and 17 (some fullpage) woodcuts. 2 unn. leaves, 723 pp., 28 unn. leaves; 657 pp., 36 unn. leaves. Thick-8vo. Beautiful contemporary vellum, spine lettering labels.

Nürnberg, J. F. Rüdiger, 1732. 4900.–

A VERY FINE AND FRESH COPY of this famous work, a storehouse of contemporary knowledge and a most extraordinary compendium of the technology of the various branches of craftsmanship.

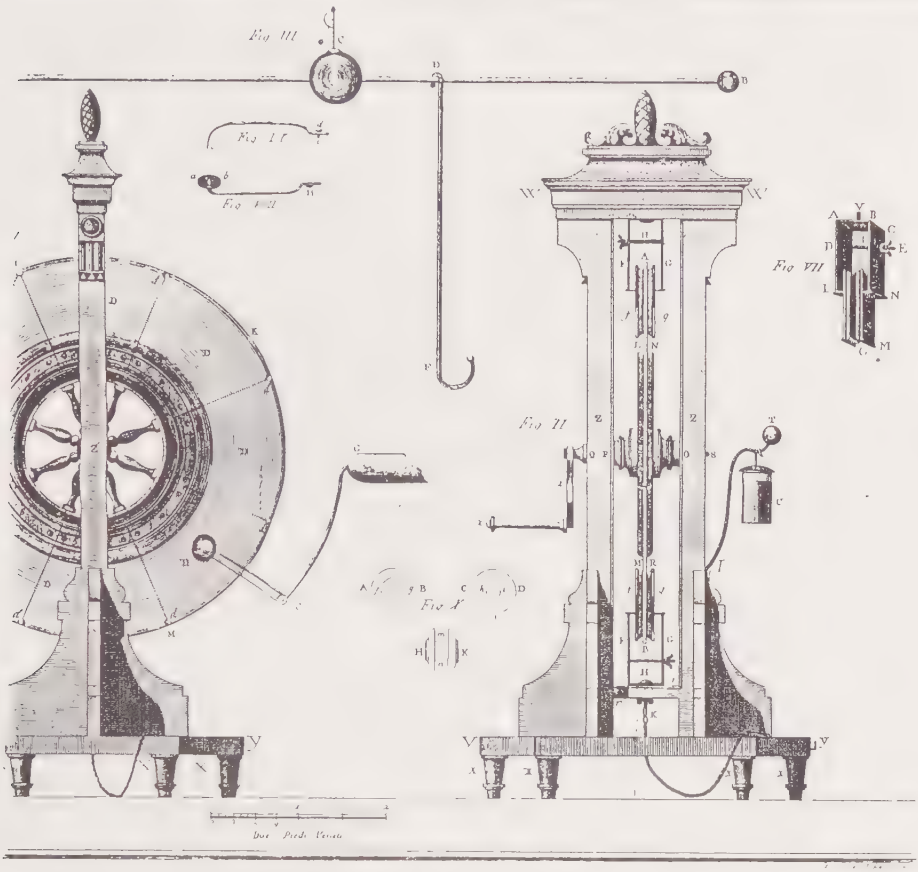
„Diese kleinen technischen Handbücher waren für den Berg- und Hüttenmann, für Münzbeamte, Goldschmiede und Handwerker bestimmt. Besonders die Probier- und Kunstbüchlein, mit ihren Rezepten für Metallprüfung und -Scheidung, für Herstellung von Legierungen, und auch für die von Farben, Tinten und dergl., waren für das Handwerk und auch für die Buchkunst wichtig, deren Blüte auf alten Erfahrungen und gediegenen Kenntnissen beruhte. Wenn manche dieser Aufgaben heute umständlich und bisweilen sonderbar erscheinen, so ist dies den schönen Erfolgen gegenüber, die mit ihrer Hilfe erzielt wurden, und die wir an so vielen hervorragenden alten Stücken bewundern können, ganz ohne Bedeutung." (Darmstädter)

Die „Kunst- und Werck-Schul" is written very much in the style of a notebook or recipe book for the early practicing metallurgist, primarily those working with silver and gold. There is much talk about furnaces and crucibles and chemicals, on BRONZE CASTING, THE MAKING OF GLASS, PORCELLAIN AND CERRAMICS, OR EVEN METALLIC MIRRORS. There are chapters on iron and steel and how to temper and etch steel welding and other processes important for the manufacture of armour.

In the second volume the attentive reader finds chemical recipes for the preparation of colours (cinnabar, vermilion), many methods of gilding and coating with silver, copper, etc. the preparation of alloys; colours for writing and illuminating; the manufacture of „turkish paper", that is the fine and colourful marbled paper we admire so much today.

Finely illustrated by woodcuts depicting some complicated apparatus. A really fine and fresh set.

Ferchl, p. 289 (later edition only); not listed by Holzmann-Bohatta; cf. Darmstädter, Berg-, Probier- und Kunstbüchlein, 1926; Not in Hoover Collection; cf. Partington II and Thorndyke V/VII.



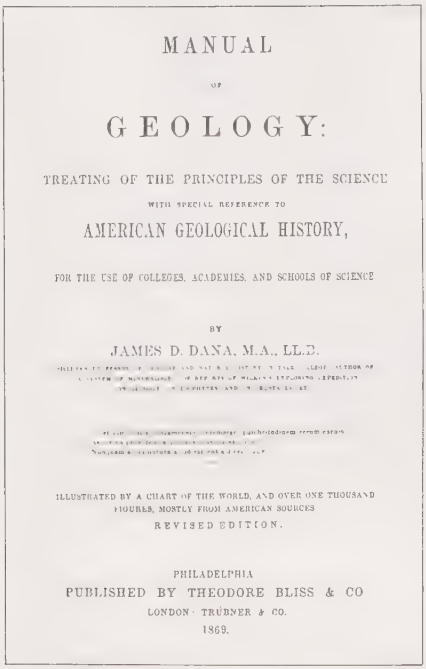
Large Paper Copy

49 DAL NEGRO, SALVATORE. Nuovo metodo di costruire macchine elettriche di grandezza ullimitata e nuovi sperimenti diretti a rettificare l'apparato elettrico dell' Abate Salvator Dr. Dal Negro ... Illustrated by a very large engraved folding-out plate. XXXII, 112 pp. Tall-8vo. Contemporary coloured paper wrappers as issued. Venice, Pietro Zerletti, 1799. 2400.–

FIRST EDITION of the first published work by Abbate Salvator dal Negro (1768–1839), professor of physics and mechanics at Padua and the inventor of the first electromotor.

„Owing to the rarity of his works, dal Negro's researches in electricity have been very much neglected, and would well repay the attention of the historian of physics" my distinguished colleague Zeitlinger commented in his catalogue already as much as two generations ago. Dal Negro's works were never reissued or reprinted.

„Mahr, Entstehung der Dynamomaschine (Geschichtl. Einzeldarstellungen aus der Elektrotechnik, volume V), pp. 25, 28 etc.; Mottelay 589; Poggendorf II, 265 (listing a 1801 edition? a reprint after all?); Ronalds 123; Sotheran SS 2, 16016 („VERY RARE" in 1937!)



MANUAL

OF

GEOLOGY:

TREATING OF THE PRINCIPLES OF THE SCIENCE

WITH SPECIAL REFERENCE TO

AMERICAN GEOLOGICAL HISTORY,

FOR THE USE OF COLLEGES, ACADEMIES, AND SCHOOLS OF SCIENCE

BY

JAMES D. DANA, M.A., LL.D.

ILLUSTRATED BY A CHART OF THE WORLD, AND OVER ONE THOUSAND FIGURES, MOSTLY FROM AMERICAN SOURCES

REVISED EDITION.

PHILADELPHIA

PUBLISHED BY THEODORE BLISS & CO

LONDON: TRÜBNER & CO.

1869.

A Fine Autographed Letter Tipped in

50 DANA, JAMES D. Manual of Geology: Treating of the Principles of the Science with Special Reference to American Geological History ... Illustrated by a (colored) chart of the world, and over 1000 figures, mostly from American sources. Revised Edition. XVI, 800 pp. Tall-8vo. Contemporary half cloth.

Philadelphia, Bliss & Co., 1869. 1200.–

CLASSICAL VOLUME in American Geological literature. A well preserved copy.

James Dwight Dana (1813–1895) was an eminent zoologist, geologist and mineralogist. Between 1850 and 1894 he was professor at Yale. His „Manual of Geology", first published in 1863, exercised a great influence upon the study of the subject in the US and abroad.

A fine autographed letter by Dana is tipped in before the halftitle; it is dated „New Haven, July 2, 1871" and is addressed to the publishers Trübner & Co.:

„... about a German translation of my Text Book of Geology. I have replied to them that there is no objection to furnishing electrotypes of the cuts; but that I propose to get out a new edition within a year from this time containing some alterations of great importance, such as are required by the recent discoveries in the science; and it would be unfortunate all around to have the translation made now from the present (i. e. the volume offered here) edition..."

The letter is signed „James D. Dana" followed by the address. – A rare association item!

Zittel, Geschichte der Geologie, 459; Green, Geology in the 19th Century, pp. 124 ff.; DSB III, 549 ff.

New Haven, July 2. 1871

Messrs Trubner & Co.

Messrs Dorion, Blakeman, Taylor & Co. have written me about a German edition of my Text-Book of Geology. I have replied to them that there is no objection to furnishing electrotypes of the cuts; But that I propose to get out a new edition within a year from this time containing some alterations of great importance, such as are required by the recent discoveries in the Science; and it would be unfortunate all around to have the translation made now from the present edition. It had better, by all means be delayed a year, and I would ask you thus to advise the translator.

Yours very truly
James D. Dana

51 D'AUBUISSON DE VOISINS, J. F. Traité de Géognosie, ou exposé des connaissance actuelles sur la constitution physique et minérale du globe terrestre. 2 tomes. With 2 folding plates (1 coloured). 4, LXII, 496; 4, 665 pp. 8vo. Contemporary grey boards with original printed paper labels.

Strassburg & Paris, 1819. 850.–

FIRST EDITION. D'Aubuisson de Voisins (1769–1841) came from Southern France. He studied at Freiberg Mining Academy (Bergakademie) from 1797 to 1802 under the famous Werner. On returning to France, he entered the service of the government in the Department of Mines and speedily rose to the rank of „Ingénieur en Chef au Corps Impérial des Mines". Like others, when he left Freiberg, he was an ardent Neptunist. Still, in later years retaining his profound admiration for Werner, he nevertheless relinquished one after another the peculiar tenets of the Freiberg School, and became so imperial a chronicler of geological progress, that in his remarkable „Treatise on Geognosy", though inclining, on the whole, to his master's system, he did not entirely adopt it, but presented his facts and inferences in such a manner that, as he himself claimend, even a follower of Hutton would hardy find a few paragraphs which he would wish to modify. A good set of a classic in geological literature.

Adams, Birth... of Biological Sciences, p. 237; Geikie, Founders of Geology, pp. 241 ff; Zittel, Geschichte der Geology, pp. 203.

Presentation Copy

52 DEBYE, PETER. Zur Theorie der Elektronen in Metallen. Offprint from the „Annalen der Physik IV, 33", pp. 441–489. 8vo. Original brown printed wrappers.

Leipzig, Barth, 1910. 120.–

FIRST EDITION. One of the few offprints for the author bearing the imprint „Ueberreicht vom Verfasser".

Presentation Copy

53 DEBYE, PETER. Die Berechnung der Moleküldimensionen aus Radiometerbeobachtungen. Offprint from „Physikalische Zeitschrift, XI, pp. 1115–1121. 4to.

Leipzig, 1910. 65.–

FIRST EDITION. Author's offprint with the imprint „Uberreicht vom Verfasser", as issued i. e. without wrappers.

Presentation Copy
Outstanding Paper

54 DEBYE, PETER. Zur Theorie der spezifischen Wärmen. Offprint from „Annalen der Physik IV", 39, pp. 789–839. 8vo. Original brown printed wrappers, small hole in front wrapper.

Leipzig, 1912. 250.–

FIRST EDITION. One of the few copies made for the author with the imprint „UEBERREICHT VOM VERFASSER".

„Die Beobachtungen, welche im Laufe der letzten Zeit im NERNSTSCHEN Laboratorium über die Temperaturabhängigkeit der spezifischen Wärmen ausgeführt wurden, haben in überzeugendster Weise auch für materielle Körper die Unrichtigkeit des Satzes von der gleichmässigen Energieverteilung dargetan..." (p. 789).

In his second outstanding paper, Debye treated a solid as a system of vibrating atoms and modified Einstein's theory of specific heats, which had been only partially successful *(see ALBERT EINSTEIN CATALOGUE 278, no. 41 – Weil no. 43*)*. He showed that the solid could be characterized by a complete spectrum of eigen-frequencies and that the specific heat of a monatomic solid was a universal function ... now commonly called the DEBYE TEMPERATURE. The Debye equation, involving the then recently developed quantum theory, gave quantitative agreement with observed specific heat values. Aside from a numerical factor, it differed from the Einstein equation in containing both the compressibility and Poisson's ratio *(Poisson, see catalogue 282, no. 228)*.

DSB III, 619.

Presentation Copy

55 DEBYE, PETER & J. KERN. Ueber die Behandlung gekoppelter Systeme nach der Methode der Eigenschwingungen. Offprint from „Physikalische Zeitschrift, XV", pp. 490–497. 8 pp. 4to. Original brown printed wrappers.

Leipzig, 1914. 120.–

FIRST EDITION and one of the few offprints made for the use of the authors with the imprint „Ueberreicht von den Verfassern".

The authors refer to a paper by Max Born (the same journal, volume XV, p. 185) on the „accoustic spectrum" – „Herrn Born, mit dem wir inzwischen noch über die vorliegende Frage korrespondieren konnten, hat sich mit der vorgeschlagenen Lösung einverstanden erklären können." (p. 3)

Presentation Copy
Debye Factor

56 DEBY, Peter. Interferenz von Röntgenstrahlen und Wärmebewegung. Offprint from „Annalen der Physik IV, 43". 46 (+ 1 blank) pp. 8vo. Original brown printed wrappers.

Leipzig, Barth, 1914. 220.–

FIRST EDITION – offprint for the author with the imprint „UEBERREICHT VOM VERFASSER".

Following his series of papers published in the „Verhandlungen der Deutschen Physik. Gesellschaft", late in 1915 Debye sent in for publication a long paper deriving a factor now called the DEBYE FACTOR, which gave the decrease of intensity of the diffraction spots as a function of wavelength, diffraction angle, and absolute temperature.

DSB III, 619.

Presentation Copy

57 DEBYE, PETER. Konzentrationselement und Brownsche Bewegung. Offprint from the „Physikalische Zeitschrift, 18". 5 (+ 1 blank) pp. 4to. Original grey printed wrappers.

Leipzig, 1917. 120.–

FIRST EDITION in an author's offprint with the imprint „Ueberrreicht vom Verfasser". The paper was a contribution to the Kleinert-Festschrift published in the „Mitteilungen der Physikalischen Gesellschaft, Zürich" *(see my ALBERT EINSTEIN CATALOGUE 278, no. 69)*. This paper is also present here as an extract from that journal's pages 19–38.

58 DEBYE, PETER. Struktur der Materie. Vier Vorträge. Mit 21 Abbildungen. IV, 50 pp. 8vo. Original stiff printed wrappers.

Leipzig, Hirzel, 1933. 130.–

FIRST EDITION in bookform.

„In den letzten Jahren hatte ich in Deutschland, sowie in England und Amerika mehrfach Vorträge zu halten. Sie behandelten Strukturfragen, für welche wir uns im Leipziger Institut interessiert hatten. Manchmal wurde der Wunsch geäussert, die Vorträge gedruckt zu sehen in der Form, in der sie gehalten wurden, so dass nicht nur der Fachmann sie verstehen konnte ..." (Debye's preface).

59 DEBYE, PETER. Einfluss des molekularen Feldes auf den Verlauf adiabatischer Entmagnetisierungsprozesse bei tiefsten Temperaturen. Mit 2 Abbildungen. Offprint from „Berichte der Mathemat.-Physik. Klasse der Sächs. Akad. d. Wissenschaften zu Leipzig, 86". 10 pp. 8vo. Original blue printed wrappers.

Leipzig, 1934. 150.–

FIRST EDITION. It was Debye's last term as professor of experimental physics, a professorship reported to be the most lucrative in Germany. In 1934 he moved to the University of Berlin as professor of theoretical physics. In 1936 Debye received the Nobel Prize in chemistry.

I close this important small collection of books and papers by Peter Debye with the a. m. listed AUTHOR'S OFFPRINT in which Debye, independently of Giauque has also stated the principles of the method for reaching low temperatures by adiabatic demagnetization.

In 1940 Peter Debye left for the United States, there he stayed, taking up the position as professor of chemistry and head of the department at Cornell University, remaining until his retirement in 1952.

Nobel, The Man and His Prize, 337; DSB III, 620.

Foundation of Hygrometry

60 DE LUC, JEAN ANDRÉ. Recherches sur les modifications de l'atmosphère. 2 volumes. Illustrated with 7 engraved folding plates and 1 table. IV, VIII, 416 pp.; XI, 489 pp. 4to. Contemporary brown calf, coloured spine labels.

Genève, 1772. 2600.–

FIRST EDITION of the principal work of the Genevan geologist and physicist Jean André De Luc (1727–1817), to whom 18th century meteorology owes its greatest progress. „In this work De Luc recorded and analysed the results of a long course of rigorous experimentation, and brought them into relation with the experiments and theories of his contemporaries. He did not work according to any predetermined, plan, but was led on by the succession of problems arising out of his early physical experiments and alpine travels with his brother."

With these words begins A. Wolff a detailed, 14-page description of this MOST IMPORTANT WORK giving an account of De Luc's ingenious experiments upon moisture and evaporation, his observations on the density of water and thawing ice, the improved construction of hygrometer, thermometer and barometer and the methods for measuring humidity, altitudes, etc.

Middleton, in his „Invention of the Meteorological Instruments", 1969, among other things points out De Luc's perfection of the siphon barometer. – A well preserved copy.

Darmstaedter pp. 217 ff.; Ferchl p. 323; Poggendorf I, 545; Wolff, History of Science ... 18th century, pp. 288 ff.

61 DESLANDRES, H. A. Spectres de bandes ultra-violets des métalloides, avec une faible dispersion. With 2 double-page plates. 2, 84, 2 pp. 4to. Original wrappers.

Paris, 1888. 350.–

FIRST EDITION. Author's off-print from „Annales de Chimie et de Physique, 14." A very rare paper.

Henri Alexandre Deslandres was the first to present, from a large amount of experimental data, a formula which served as a model of later developments in band spectra of researches, the characteristic spectra of molecules containing more than one atom. The explanation of Deslandres' formulas on the QANTUM THEORY and of BOHR'S THEORY was entered upon in 1916 by Bjerrum, Schwarzschild and Heurlinger.

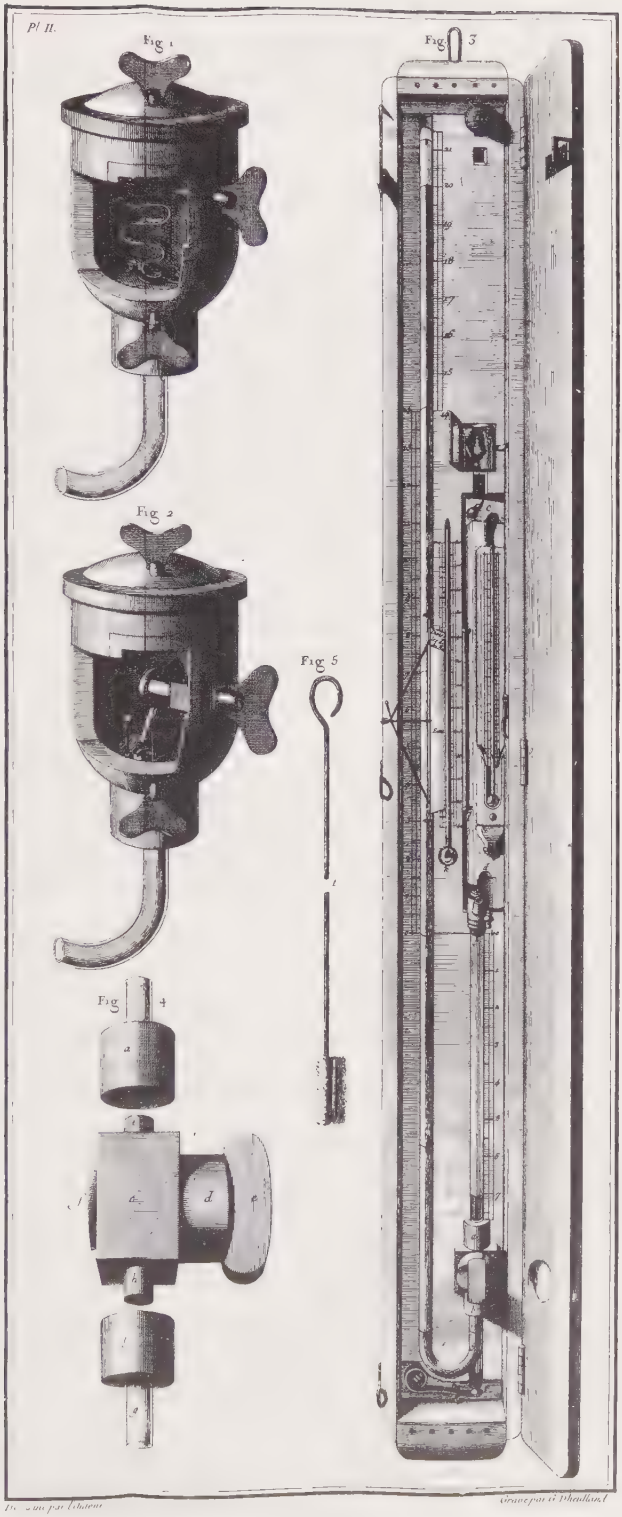
Cajori, History of Physics, p. 340; Taton, History of Science 20th, p. 1301; Sommerfeld, Atombau ... 1922, p. 505 ff.

62 DOELTER, C. Das Radium und die Farben. Einwirkung des Radiums und ultravioletter Strahlen auf organische und anorganische Stoffe sowie auf Mineralien. With figures. VIII, 133 pp. 8vo. Original stiff wrappers.

Dresden, Th. Steinkopff, 1910. 225.–

FIRST EDITION of a basic treatise on the reaction of organic and anorganic materials to the treatment with x-rays and ultra-violet rays. C. Doelter, professor at Vienna, was one of the chief authorities on the subject.

Cf. Taton, Science in the 20th Century, p. 305.


Pl II.
Fig 1
Fig 2
Fig 3
Fig 4
Fig 5

Famous Standard work

63 DRUDE, PAUL. Lehrbuch der Optik. Mit 110 Abbildungen. XIV, 498 pp. Large 8vo. Original dark blue cloth, gilt lettering.

Leipzig, Hirzel, 1900. 350.–

FIRST EDITION of this famous standard work of which a second edition appeared as early as 1906. An American edition came out in 1903 and was printed as late as 1959. A fine fresh copy and very rare.

Paul Karl Ludwig Drude (1863–1906) had studied in Göttingen, Freiburg and Berlin and became Director of the Institute of Physics in Giessen. Drude's chief contributions to science fall into two categories: his early work in physical optics, in which he concentrated on the relationship between the physical properties and the optical characteristics of crystals, and his later work, in which he attempted to explain both physical and optical properties in a unified theory. In both physical and optical properties were carefully interwoven. Drude may be considered the intellectual descendant of Franz Neumann – the first of Germany's great theoretical physicists who developed a mechanical theory of light propagation based on the work of Fresnel and closely related to Fresnel's own theory.

The organisation of Drude's „Lehrbuch der Optik" reflects his own approach to problems in optics. The first half of the book is devoted almost exclusively to the phenomena and to their mathematical characterization. Then, after a brief outline of the mechanical and electromagnetic theories, Drude gives what he considers to be the advantages of the electromagnetic theory: first, transverse waves are a direct consequence of Maxwell's conception of electromagnetic interaction; second, special boundary conditions are not repquired in the electromagnetic theory for radiation in the optical region of the spectrum; and third, the velocity of light can be determined directly from electromagnetic experiments.

Dict. of Scient. Biography, vol. IV, pp. 189–192.

Providing a Whole Generation of Physicists and Chemists
One of the Founders of Modern Physical Chemistry

64 DUHEM, PIERRE-MAURICE-MARIE. Traité élémentaire de mécanique chimique fondée sur la thermodynamique. 4 volumes. Illustrated by many woodcuts in the text. *I:* VIII, 299 (+ 1) pp.; *II:* 4, 378 pp.; *III:* 4, 380 pp.; *IV:* 4, 381 (+ 3) pp. Large-8vo. Contemporary half morocco.

Paris, 1897–1899. 1400.–

FIRST EDITION in a well preserved set.

Chemical thermodynamics was developed by Pierre Maurice Marie Duhem (1861–1916), professor of theoretical physics in Bordeaux. He was that rare, not to say unique, scientist whose contributions to the philosophy of science, the historiography of science, and science itself (in thermodynamics, hydrodynamics, elasticity, and physical chemistry) were of profound importance on a fully professional level in all three disciplines.

Duhem began his scientific work with the generalization and application of thermodynamics. He had read Lemoine's description of J. W. Gibb's work and the first part of Hermann von Helmholtz' *„Die Thermodynamik chemischer Vorgänge" (please see item no. 337).* These papers emphasized the characteristic functions, now called the Gibbs and Helmholtz free energies. These functions play a role for thermodynamics directly analogous to the one played by the potential of classical mechanics. Duham was one of the first to see real promise in this. Using this idea together with the principle of virtual work, he treated a number of topics in physics and chemistry.

Among the subjects treated systematically were thermoelectricity, pyroelectricity, capillarity and surface tension, mixture of perfect gases, mixtures of liquids, heats of solutions and dilution, saturated vapors, etc. His success with these problems in the period 1884 – 1900 rank him with van't Hoff, Ostwald, Arrhenius as one of the founders of modern physical chemistry.

Duhem's results are of course an extension and elaboration of the pioneer work of Gibbs and von Helmholtz. Duhem's elaboration, explanation and application of their suggestions in his four-volume „Traité" and the „Thermodynamique et chimie (1902)" provided a whole generation of French physicists and chemists with their knowledge of chemical thermodynamics.

Duhem's purely scientific investigations and results in these fields are important, useful and significant today. By midcentury Duhem's scientific work had been almost completely forgotten. Since then, his contributions have been rediscovered, and are being increasingly cited and given the recognition they deserve (witness e. g. the short entry in Partington's history of chemistry).

DSB IV, 225–233; Partington IV, 616.

The Founder of Russian Palaeontology

65 EICHWALD, EDUARD VON. Naturhistorische Bemerkungen, als Beitrag zur vergleichenden Geognosie, auf einer Reise durch die Eifel, Tyrol, Italien, Sizilien und Algier. Illustrated by four original lithographs. 3 unn. leaves, 464 pp., 1 leaf. 4to. Contemporary green boards, printed front cover mounted.

Moscow, Kaiserliche Universität, & Stuttgart, Schweizerbart, 1851. 650.–

FIRST EDITION in a very well preserved and very fresh copy. The volume was published as volume IX of the „Mémoires de la Société des Naturalistes de Moscou".

Karl Eduard von Eichwald (1795–1876) studied medicine in Berlin and after a temporary engagement as physician in Kurland he habilitated 1821 in zoology and became lecturer in geology and for the first time ever in Russia, also in palaeontology. In 1823 he was called in the chair of zoology at Kasan. From 1838 to 1851 he was professor and secretary at the medical-surgical Academy at St. Petersburg. His comprehensive collection formed the basis of the zoological and paleontological museum of this town.

„Eichwald ist einer der deutschen Gelehrten, die in der 1. Hälfte des 19. Jahrhunderts entscheidenden Anteil am Auf- und Ausbau der Naturwissenschaften und ihrer Institutionen in Russland hatten. Für die russische Geologie, die er durch verschiedene Spezialarbeiten bereicherte, wie auch für die Mineralogie schuf er die ersten vollständigen Handbücher in russischer Sprache. Das grösste Verdienst erwarb er sich um die russische Paläontologie, als deren Begründer er bezeichnet werden kann." (NDB IV, 387)

With Einstein Autograph
Original Offprints of all three 1905 Papers
One of the Most Remarkable Volumes in Science Literature

66 EINSTEIN, ALBERT. Zur Elektrodynamik bewegter Körper, pp. 891–921, verso blank.

EINSTEIN, ALBERT. Ueber einen die Erzeugung und Verwandlung des Lichts betreffenden heuristischen Gesichtspunkt, pp. 132–148 (recto of page 132 blank).

EINSTEIN, ALBERT. Ueber die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhenden Flüssigkeiten suspendierten Teilchen, pp. 549–560.

Three epochal papers bound in 1 volume constituting the ENTIRE and famous volume 17, series IV, of „Annalen der Physik". All papers therein in offprint-form. Thick 8vo. Contemporary half morocco, gilt lettering on spine.

Leipzig, Barth, 1905. 16000.–

FIRST EDITIONS and present here in the exceedingly are original *off-prints* with the blank pages either at the beginning or the end (or at both) of the papers present in this volume. Tipped-in inside frontcover a small card with Einstein's signature „A. Einstein".

This volume bears the exlibris stamp of Robert Wichart Pohl (1884–1976) and contains one of his papers published in the „Annalen"" „Ueber das Leuchten bei Ionisation, etc. (pp. 375 ff.)". Pohl was professor of physics at Berlin and Göttingen where he was also the director of the I. Physikalische Institut der Universität Göttingen. Later he was co-editor of the famous „Zeitschrift für Physik". Pohl was one of the very early and first to lay the foundations for microelectronics with his fundamental researches into crystallography (see Queisser; Kristallene Krisen, pp. 66 ff.) Either he had a special connexion to the publishers of the „Annalen" to be able to obtain this unusual volume which contains all papers published in that volume 17 in the same offprint form, or he got it from the printers himself being a contributing author to the „Annalen".

A. Einstein

6. *Über einen die Erzeugung und Verwandlung des Lichtes betreffenden heuristischen Gesichtspunkt; von A. Einstein.*

---

5. *Über die von der molekularkinetischen Theorie der Wärme geforderte Bewegung von in ruhenden Flüssigkeiten suspendierten Teilchen; von A. Einstein.*

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3. *Zur Elektrodynamik bewegter Körper; von A. Einstein.*

The offprints have the same pagination as the journal issues have. Issue titles like the one illustrated in Horblit for the 1916 paper (for he had only the journal issue) came up in later years only and weren't done at all in 1905/1910. As the offprints were printed without the imprint „Separat-Abdruck" (with the mentioned exception) it may be concluded that these authors's offprints were struck immediately after the type-setting („which probably was done successively as the manuscripts were received by the editors and passed on to the printer", Jörg Schäfer in his catalogue 17). There is no new pagination in the offprints.

As Einstein was a relatively unkown quantity at the time of the publication of his epochal three papers, he possibly received only a very few copies of the author's edition of offprints. I have in many years of collecting *Einstein* seen only three copies of them, that in Interlibrum Catalogue 300, the Howell copy which actually is an Interlibrum duplicate and the ones offered here. The publishers have lost their archives during the Blitz in 1940–1945 and connot give much information on the printing history. They informed me, however, that after 1920 authors received 75 copies of their offprints and before that considerably less. After 1920, however, Einstein published his papers in other journals.

Well, I have compared the author's offprints as offered in my catlogue 300 with the present series of all three and I have found my prediction confirmed: they are genuine offprints and agree in all points. They are one of a few copies printed, only. I may conclude that the volume offered here and which Max Born desbribes as *one of the most remarkable volumes in the whole scientific literature,* was issued even before the periodical issues were mailed off to the subscribers and that we have here genuine pre-publication items.

There is furthermore internal evidence of slight traces of the remains of the typically publisher's wrappers in the inside (binding) edges which are customary removed before binding the volume.

His *„Electrodynamics of Moving Bodies"* (Paper I) which contains Einstein's deducation that the matter is one form of energy and that a quantity of energy equals the product of mass times the square of the velocity of light. If, therefore, a transformation of mass could be effected, there would result an enormous release of energy, a transformation of mass could be effected, there would result an enormous release of energy, a process continuing upon the sun's surface. This has formed the *basis of today's atomic reactors and thermo-nuclear releases of energy;* in his honour the unit of radiant energy has been named the *Einstein.*

The second paper, an early application of the quantum theory of light, was a giant step in the development of the quantum theory beyond Planck's theory of the radiation formula. In this paper Einstein developed the concept of light quanta of *„photons"* as they are designated in modern terminology. For this paper and for his *„Theory of Light Production and Ligth Absorbation"* he received the Nobel Prize in 1821.

„On the Movement of Small Particles Suspended in a Stationary Liquid Demanded by the Molecular-Kinetic Theory of Heat" contains the solution of the problem which Einstein put forward in his 1904 paper. This predicted motion of colloidal particles was already widely known as Brownian motion, but at the time Einstein wrote this paper he knew virtually nothing about what had been observed and hesitated to identify the two motions. The hope Einstein expressed at the end of his paper, „that some enquirer" undertake an experimental test of his predictions, was fulfilled several years later when Jean Perrin's experiments confirmed the correctness of all features of the Brownian Motion Equation and provided a new determination of Avogadro's number (see our catalogues Nos. 261 ff.).

I. Horblit, 100 Books Famous in Science No. 26 b; Dibner, Heralds of Science, No. 167; Printing and the Mind of Man No. 401 & 408; Weil 9* (II & III: 6*, 8*); Schilpp-Shields No. 9 (II & III: 7, 8).

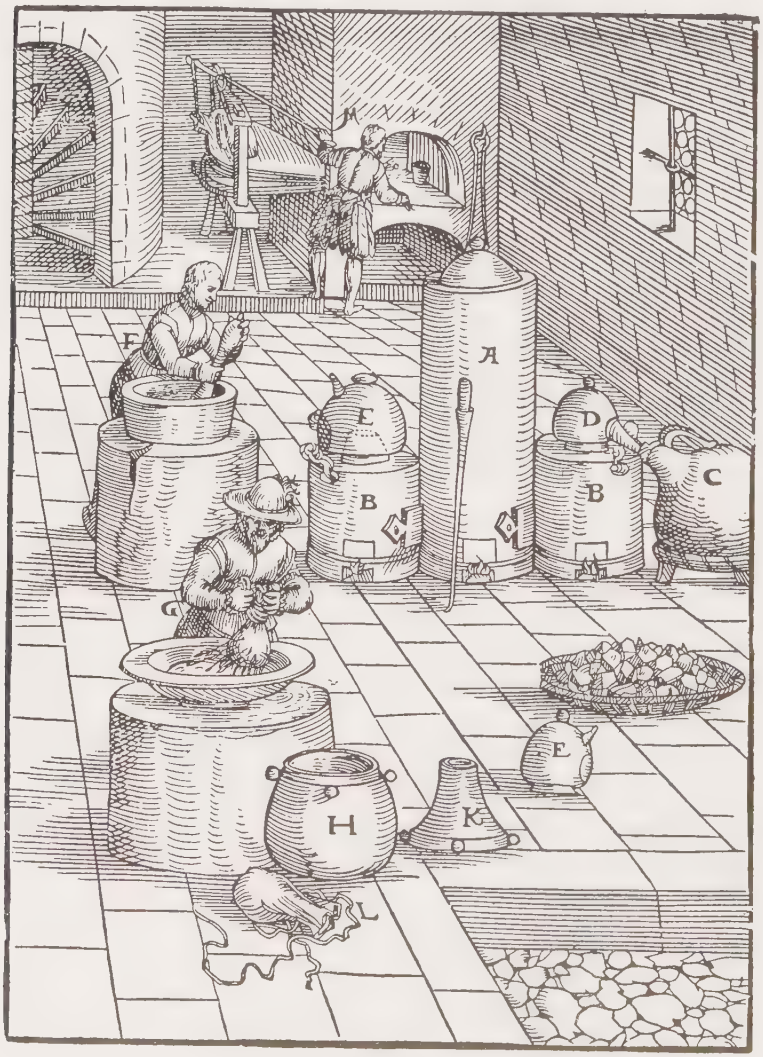
To nicely round up this offer I have included at no charge several textbooks published by the previous owner of this most remarkable volume, R. W. POHL. 1. Die Physik der Röntgenstrahlen. 164 SS. Braunschweig, 1912. – 2. Einführung in die Physik, 3 volumes. Berlin, 1942, 1935, 1940 (see Lemmerich, *Born-Franck;* Physiker in ihrer Zeit. Der Luxus des Gewissens. Staatsbibliothek Berlin, 1982, pp. 50 ff.).

67 EINSTEIN, ALBERT. Zur Theorie der Brownschen Bewegung. Extr. from: Annalen der Physik IV, volume 19, pp. 371–381. 8vo. Protective cloth case.
Leipzig, 1906. 700.–

FIRST EDITION. When the kinetic theory was, so to speak, at its last gasp, it was saved or at least given a new lease of life by Einstein. He opened a new field of quantitative investigation in which the anticipations of the kinetik theory were found to be in remarkable agreement with experimental measurements. Einstein, beginning in 1905, developed the mathematical theory of the Brownian movement and sought to determine how a given particle should move over a protracted period of time.

Einstein also established the formula for the rotations of the particles that arise from the molecular impacts (Brownian movements of rotation).

Weil *No. 11*;* Schilpp-Shields No. 12; d'Abro, Rise of Modern Physics, pp. 412 ff.



– No. 68 –

Pioneer in Materials Testing
Enormous Influence on Subsequent Literature

68 ERCKER, LAZARUS. Aula Subterranea... Das ist: Unterirdische Hoffhaltung, ... oder gründliche Beschreibung der jenigen Sachen, so in der tieffe der Erden wachsen, als aller Ertzen... auch fürnehmster Mineralien... Zum viertenmahl gedruckt. Illustrated by a series of 41 large woodcuts plus the engraved frontispiece-title. 6 unn. leaves, 196 pp. Folio. Modern half vellum.

Frankfurt, David Zunner, 1703. 3500.–

AND BOUND WITH:

BERWARD, CHRISTIAN. Interpres phraseologiae metallurgica, Oder Erklärung der fürnehmsten terminorum und Reden-Arten, welche bey den Bergleuten, Puchern, Schmeltzern, Probirern und und (!) Münzmeistern, etc. ... gebrächlich sind... 39 pp. Folio.

Frankfurt, David Zunner, 1702.

AD I: In the year 1574, when Ercker's book was first printed, Copernicus had been dead for thirty years, and all educated men were thoroughly familiar with his concept of heliocentricity, though the unlettered would not yet have been aware that man had been deposed from his cardinal position in the universe. The return of the ships of Columbus from the Indies could have been witnessed by men still living, and Magellan's circumnavigation of the earth was barely fifty years past. Ercker may have been at work on his manuscript as Sir Francis Drake stood on the Isthmus of Panama and, surveying the Pacific Ocean, made his vow to sail an English ship thereon. This vow Drake kept, paying his first visit to California before the second edition of Ercker's book came from the press.

When Ercker wrote, Shakespeare was but two years old, Galileo was ten, and Tycho Brahe, Stevin, and Gilbert were active in their respective science. Ercker lived at the time when the separate works and habits of thought of the medieval artisan, philosopher, and creative artist were beginning to merge to form the basis of modern science. It was a period which produced, *for the first time in history*, writings which the modern scientist without special historical and philosophical preparation can easily understand and relish as the products of kindred minds. Ercker was a practical man and one of the best and most literate, who seems closest to us today. The 20th Century chemist or metallurgist can read his book with pleasure and find in it many descriptions of laboratory practice or industrial operations that touch on his own experience, and much to indicate a similar professional attitude.

A reader accustomed to the alchemical writings of the 16th century will be amazed at the clarity of Ercker's treatise, with its completely realistic descriptions of the apparatus used and its straightforward instructions for the various laboratory operations. Ercker, along with Agricola and Biringuccio, was the chief spokesman in printed form for most of the metallurgical knowledge of the 16th century and his influence on later assaying literature was enormous. Working as chiefinspector of mines in Bohemia under Emperor Rudolph II., Ercker (died 1593) systematically reviewed the methods testing alloys and minerals, supervised smelting operations and may thus be titled father of materials testing, a branch of modern technology without e g. aircraft industry to name but one, would be noneexistend.

AD II: The second title, which is usually found bound together with Ercker's work deals with the language and the terminology of miners and metallurgists. IT IS THE EARLIEST GERMAN DICTIONARY OF MINING TERMS.

A well preserved and uncut copy; final page with insignificant hole, page neatly mounted. Uncut copy with wide margins.

Beierlein, Ercker, pp. 77 ff.; Sisco & Smith, Ercker's Treatise on Ores and Assaying, pp. VII ff.; Dibdin, Heralds of Science, 89; Darmstaedter, Probierbüchlein, 92; Ferguson I, 245; Duveen, p. 195 (listing the 1736 edition only!); Graesse IV, 246; Lipperheide PD 4; Neu 1317 (only 1739 edition).; Hoover Collection of Mining, 280 ff. (other editions).

For the above mentioned AGRICOLA please see item no. 3 and for BIRINGUCCIO please see item no. 23.

Classic in Geology – Inscribed Copy

69 ESCHER VON DER LINTH, ARNOLD & BERNHARD STUDER. Geologische Beschreibung von Mittelbünden. Illustrated by 2 large lithographed folding-out maps, 13 plates (of which 2 are finely colored). 218 pp. 4to. Original wrappers.

Zürich, 1839. 680.–

FIRST EDITION in a fresh and entirely uncut copy with presentation inscription by Bernhard Studer „Monsieur d'Omalius d'Halley hommage resp. de B. Studer".

Arnold Escher von der Linth (1807–1872) in collaboration with his friend and colleague Bernhard Studer (1794–1887) laid here the foundations for a geological description of the alps which was to culminate in the first geological map of Switzerland which they published in 1853 (please see my catalogue BIBLIOTHECA HELVETICA XIV/290, 129) and which have remained valid up to the present day.

DSB XIII, 123; Fueter, Grosse Schweizer Forscher, 216; Zittel, History of Geology, pp. 536 ff.

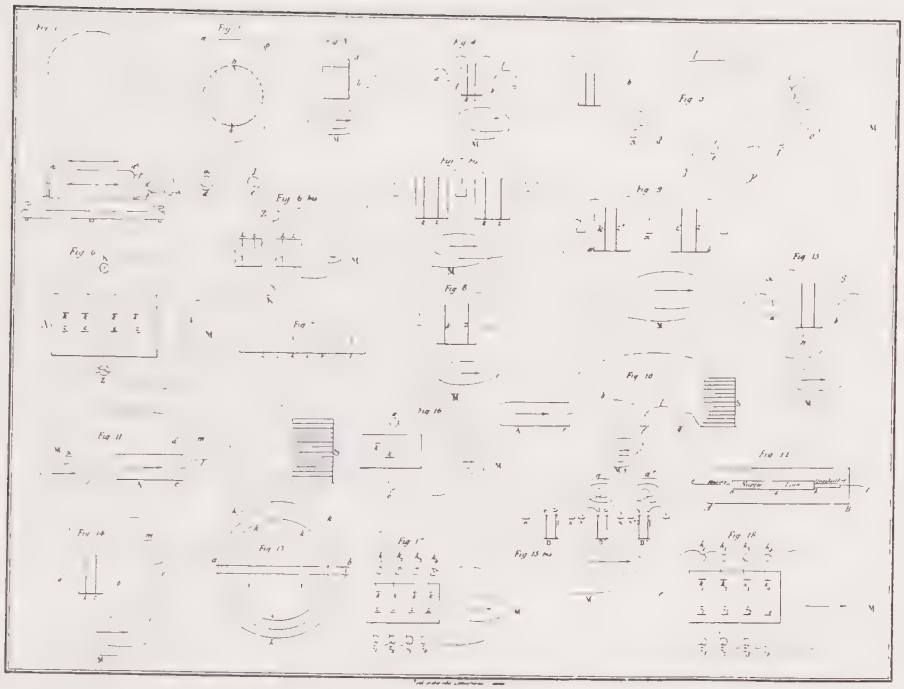
70 FAVRE, ALPHONSE. Recherches géologique dans les parties de la Savoie, su Piémont et de la Suisse voisins du Mont-Blanc. 3 volumes of text and 1 atlas-volume. Large 8vo and folio. Contemporary half calf.

Paris, 1867. 2400.–

FIRST EDITION of this rare and important work. The author, Alphonse Favre (1815–1890) professor of geology in Geneva and a pioneer in the attempt to reproduce mountain structures in the laboratory. His present elucidation of the geological structure demonstrates that certain anomalous occurrences of fossils were due to repeated interfoldings of the strata and to complicated overthrust faults.

This works belongs to the meritorious studies of alpine geology and truly is one of the cornerstones of that science.

Mather-Mason, Source Book in Geology I, p. 448; Zittel, Geschichte der Geologie, pp. 537 ff.



Landmark of Science

71 FECHNER, GUSTAV THEODOR. Massbestimmungen über die galvanische Kette. Illustrated by a lithographed folding-out plate. XII, 260 pp. 4to. Contemporary half morocco, gilt lettering and decorations on spine.

Leipzig, Brockhaus, 1831. 1400.–

FIRST EDITION of one of the landmarks in the history of sciences. A well preserved copy.

Gustav Theodor Fechner (1801–1887), one of those geniuses 19th Century Germany seemed able to produce in not too small numbers, the founder of experimental aesthetics, of psychophysics, a corner stone of experimental psychology, started out publishing what we call today science fiction. However, Fechner's first scientific work was in physics, lecturing on it in 1824 and conducting investigations in electricity, particularly on Ohm's „Galvanische Kette (1827)". In 1831 Fechner his „Massbestimmungen über die galvanische Kette", volume of great importance on quantitative measurement of the galvanic battery. This made his reputation as a physicist, and he was appointed professor of physics in 1834.

DSB IV, 556 ff.; Poggendorff I, 728; Wheeler-Gift 859.

A Collection of Classical Papers

72 FERMI, ENRICO. A Collection of Rare Original Offprints:

1. Sui momenti magnetici dei nuclei atomici. 12 pp.
   Roma, 1930.
2. Sul calcolo degli spettri degli ioni. 10 pp.
   Roma, 1930.
3. L'effetto Raman nelle molecole e nei cristalli. 22 pp., 1 blank leaf.
   Roma, 1932.

4. Sulla teoria delle strutture iperfini. 1 blank leaf, 2, 27 pp. (In collaboration with Emilio Segré).
Roma, 1933.
5. Le orbite ∞-s degli elementi. 1 blank leaf, 2, 30 pp. (in collaboration with Edoardo Amaldi).

Roma, 1934. 2800.–

FIRST EDITIONS of all five offprints. Large 8vo. Original printed wrappers.

These papers were published in the „Memorie delle Reale Accademia d'Italia. Classe di Science Fisiche, etc." They are present here in fine fresh copies.

AD 1: Fermi showed in this fundamental paper, that the nuclear magnetic moment is not of the order of magnitude of the Bohr magneton, as was generally supposed at the time, but of the order of onethousandth the magnitude of the Bohr magneton. The main result of his work is contained in Eq. 2 (on page 5), which ist very important for the analysis of hyperfine structure. Fermi further elaborated his work in the fourth paper which he published in collaboration with Edoardo Amaldi.

AD 2–5: Here Fermi develops a statistical method for determining the properties of ionized atoms and in the final fifth paper he applies these statistics to the study of elements.

Fermi, who in 1938 had to emigrate to the USA was the one responsible for building the Chicago atomic pile, the first self-sustaining atomic reactor, back in the 1940's. Shortly before he left Mussolini's Italy, Fermi was awarded the 1938 Nobel Prize in Physics.

Fermi, Collected Papers, 57 a, 63, 71, 75 b, 82; DSB IV, 576 ff.; Nobel, The Man and his Prizes, 465.

73 FERRARIS, GALILEO. Die Fundamental-Eigenschaften der dioptrischen Instrumente. Elementare Darstellung der Gauss'schen Theorie in ihren Anwendungen. Autorisierte deutsche Ausgabe . . . mit einem Anhang versehen von F. Lippich. Mit 74 Figuren im Text. XXIII, 1, 221,1 pp. 8vo. Contemporary half cloth, gilt lettering on spine.

Leizpig, Quandt & Händel, 1879. 220.–

FIRST GERMAN EDITION in a well preserved copy. Galileo Ferraris' treatise is divided in two parts. The first deals with the general theory worked out with considerable attention to mathematics; the fundmental properties of the dioptric system are considered. The second part contains the application of this theory to the eye, to lenses, and to instruments. The construction of simple and compound instruments is analysed and described in detail.

Galileo Ferraris (1847–1897) was professor of physics at the Military Academy of Torino. His famous treatise on optics was translated into English in 1919.

Poggendorff IV, 413; Brit. Optical Ass. Catalogue, 68 (only the late Engl. ed.)

74 FIEDLER, WILHELM. Die Elemente der neueren Geometrie und der Algebra der binären Formen. Ein Beitrag zur Einführung in die Algebra der linearen Transformationen. With 2 large folding-out tables. VI, 235 (+ 1) pp. 8vo. Original publisher's cloth, gilt spine decorations.

Leipzig, Teubner, 1862. 265.–

FIRST EDITION in a well preserved copy.

Wilhelm Fiedler (1832–1912) was a self-taught mathematician. However, on the recommendation of no lesser than the great A. F. Möbius, he was awarded in 1859 the degree of doctor of philosophy by the University of Leipzig for a dissertation on central projection. In 1867 Fiedler became professor at the ETH in Zürich where he was active until his retirement in 1907. The emphasis of Fiedler's activity was placed upon descriptive geometry. So his „Darstellende Geometrie, 1871", was brought, in the third edition, in organic connection with von Staudt's geometry of position (please see catalogue PRINTING AND THE PROGRESS OF MAN 300, item 270).

Coolidge, A History of Geometrical Methods, p. 116; Cajori, History of Mathematics, 297.

75 FORBES, JAMES DAVID. Travels through the Alps of Savoy and other Parts of the Pennine Chain with Observations on the Phenomena of Glaciers. Second edition, revised. Illustrated by 2 engraved maps, 9 lithographed views and 9 topographical plates. XVI, 460 pp. Large 8vo. Fine contemporary full vellum, gilt coat-of-arms on both covers.

Edinburgh, Black, 1845. 1100.–

FIRST ENGLISH WORK ON THE GEOLOGY OF GLACIERS. A well preserved copy in a nice binding.

James D. Forbes (1809–1868) discovered the polarization of radiant heat strengthening the belief in the identity of thermal and luminous radiation and thus contributed to the development of the concept of a continuous radiation spectrum. After 1840 Forbes' central interest was geology. He had become an experienced mountaineer during geological field trips in the Pyrenees, in the Pennine Chain. He turned his attention to the glaciers of the Alps of Savoy when invited there by Agassiz in 1841 on an exploratory expedition. Forbes's early publications on glaciers, claiming priority in noting their veined structure and in demonstrating that the center of a glacier moves than its sides, occasioned controversy with Agassiz and others that did not terminate even at Forbes's death. His detailed studies of glaciers aided in the establishement of modern theories of their formation and movement.

Forbes's book is scarce and hard to find; the edition was out of print within a very few years after its publication in 1845.

Coolidge, Alps in Nature & History, pp. 227 ff.; Engel, Litt. Alpestre, pp. 197; DSB V, 68 ff.; Studer, Phys. Geogr., pp. 570; Zittel, Geschichte der Zoologie, pp. 340.

76 FRAAS, EBERHARD. Scenerie der Alpen. Illustrated by over 120 illustrations in the text and on plates, 1 map. 6, VIII, 325, 1 pp. 8vo. Contemporary half cloth.

Leipzig, Weigel heirs, 1892. 225.–

FIRST EDITION in a well preserved copy.

Eberhardt Fraas (1862–1915) had studied geology under the great Zittel. He became widely know through his classic on collecting petrefacts. Fraas published on the geology of Africa as well as North America. His „Scenerie der Alpen" is based on his own excursions was designed as a practical guide to the geology of the Alps.

NDB V, 307 ff.

77 FRANKLIN, BENJAMIN. The Works. Containing several Political and Historical Tracts not included in any former Edition, and many Letters official and private not hitherto published; with Notes and a Life of the Author. By Jared Sparks. 10 volumes. Tall-8vo. Red cloth, paper spine labels.

Boston, Gray & Co. 1840. 1250.–

UNCUT AND UNOPENED SET of the FIRST COMPLETE EDITION of the writings of Benjamin Franklin (1706–1790), as far as they were known to exist at the time.

Franklin's works were not collected in his own lifetime, and he made no effort to publish his writings.

A well preserved set, clean and fresh; old ownership stamps on all titles (cancelled).

Cf. Dibner, Ten Founding Fathers of the Electrical Science, p. 17 ff.

Classical Memoir

First Systematic Use of Absolute Units in the Measurement of Magnetic Force

78 GAUSS, KARL FRIEDRICH. Intensitas vis magneticae terrestris ad mensuram absolutam revocata. 44 pp. 4to. Contemporary blue paper wrappers (presumably the original publisher's wrappers) inlaid in protective folder.

Göttingen, Dieterich, 1833. 1800.–

FIRST EDITION, FIRST SEPARATE EDITION of Gauss's celebrated paper. A well preserved copy inspite of an insignificant dampstain in final four leaves.

In electrical science Karl F. Gauss (1777–1855) is best known for his application of rigorous mathematical, analysis principally to the field of terrestrial magnetism, a field that has become of increasing importance as the lanes of commerce multiplied over the surface of the globe and even extended into outer space. His first memoir on a theory describing the earth's magnetism, „Intensitas vis magneticae terrestris", was published in 1833. In it Gauss used measurements in absolute units to describe electric and magnetic quantities for the first time. He stated, „for the complete determination of the magnetic force of the earth in a given place, three elements are required: the declination, or the angle between the place in which the magnet lies and a meridian; the inclination of its direction to the horizontal plane; and in the third place, the intensity."

He thereafter showed how it was possible to separate the earth's magnetic field into two components- one originating inside the earth and the other originating in regions outside the earth's crust.

For his contributions to our knowledge of terrestrial magnetism the International Congress of Electricians designated the value of intensity of a magnetic field by the term GAUSS. A poplularization of the term „degauss" occurred in World War II when measures were taken by the allied forces to neutralize the external magenetic field of a naval vessel and thereby to avoid triggering the magnetic mines by the enemy. These mines were energized by the magnetic field of the steel hulls of ships not degaussed.

Dibner, Ten Founding Fathers of the Electrical Science, p. 33; Darmstaedter, 1833; Falkenhagen, Gauss: Leben und Werk, SS. 233 ff.; Ostwald's Klassiker der exakten Wissenschaften, volume 53.; Wheeler-Gift, 867.

Anfangsgründe
zur
metallurgiſchen
Chymie,
in einem
theoretiſchen und practiſchen Theile
nach einer
in der Natur gegründeten Ordnung
von
C. E. Gellert,
Churfürſtl. Sächſ. Commiſſionsrathe und Oberhüttenverwalter, wie auch Mitgliede der Kayſerl. Academie der Wiſſenſchaften zu St. Petersburg.
Mit Kupfern.
Zweyte, vermehrte und verbeſſerte Ausgabe.
Leipzig,
bey Caſpar Fritſch, 1776

Moderation of Geoffrey's Affinity Table

79 GELLERT, CHRISTLIEB EHREGOTT. Anfangsgründe zur metallurgischen Chymie, in einem theoretischen und practischen Theile . . . 2nd enlarged and revised edition. Illustrated with an engraved frontispiece-portrait and 8 fine engraved folding plates. 2 parts bound in 1 volume. 15 leaves, 498 pp.; 8 leaves, 168 pp., 4 leaves. Thick 8vo. Original grey boards, uncut.

Leipzig, C. Fritsch, 1776, 1772. 2400.–

Christlieb E. Gellert (1713–1795), the brother of the poet, had studied at Meissen and Leipzg. He was professor in Leningrad, an associate of the Academy of Sciences there, where he met Euler. Returning to Germany in 1747 he settled in the famous mining town Freiberg, where he studied mining and metallurgy and became inspector of mines and smelting in Saxony. Later he also became chief inspector and professor of metallurgical chemistry on the famous Bergakademie in Freiberg.

Gellert introduced the process of cold extraction of precious metals by mercury, a works (the largest in Europe) being established at Halsbruck in 1790. Besides translating Cramer's book „Elementa Artis Docimasticae" he wrote the present very popular work on metallurgical chemistry. The book was translated into French and English. In this he modiefied Geoffrey's affinity table by having a table of 28 columns of symbols in which substances having the least affinity with the substance at the head of a column are put at the top, i. e. the reverse of Geoffrey's order.

In his work on the density of alloys he showed that this may be greater or less than that calculated by the mixture rule; it was mostly greater. Gellert assumed the existence of pores in metals. He also investigated the magnetism of alloys of iron.

Not in Duveen, Ferguson, Kopp; Neu 1599 (only the first part); Partington II, pp. 709 ff.; Poggendorff I, 870; Hoover cop. 341 (only part one).

80 GHERLI, FULVIO. Il proteo metallico. O sia delle transformazioni superficiali de' metalli, e delle differenti preparazioni de medesimi molot proprie per debellare i mali più atroci, che il corpo umano affliggono, e par iscoprirw gl'inganni de' falsi chimici... 8 leaves, 262 pp., 1 errata leaf. 8vo. Original boards, uncut copy.

Venice, G. Corona, 1721. 2200.–

FIRST EDITION of a very rare and highly interesting work which contains much practical chemistry, still showing traces of alchemical believe (aurum potabile, etc.) Fulvio Gherli (1670–1735) was physician of Prince d'Este and later of the Duke of Guastalla. Fine copy.

Duveen p. 248; Not in Ferguson; Kopp II, 368; Poggendorff I, 890; Neu 1629.

Father of Chemical Industry

81 GLAUBER, JOHANN RUDOLF. Operis mineralis. 3 parts bound in 1 volume. 67 (+ 3) pp.; 47, (+ 1 blank) pp.; 110 pp. 8vo. Contemporary vellum.
Amsterdam, J. Janssonius, 1651–1652.

and bound with 6 further tracts:

2. GLAUBER, J. R. Miraculum mundi, sive plana perfectaque descriptio admirabilis naturae, ac proprietatis potentisimi subiecti, ab antiquis menstruum universale sive mercurius philosophorum dicti, etc. 87 (+ 1 blank) pp.

Amsterdam, Janssonius, 1653.

3. GLAUBER, J. R. Explicatio tractatuli qui miraculum mundi inscribitur. 71 (+ 1 blank) pp.

Amsterdam, Janssonius 1656.

4. GLAUBER, J. R. Pharmacopoea spagyrica sive exacta descriptio. Quâ ratione ex vegetabilibus, animalibus & mineralibus, modo haud usitato... possint. Pars I. 76 pp.

Amsterdam, Janssonius, 1654.

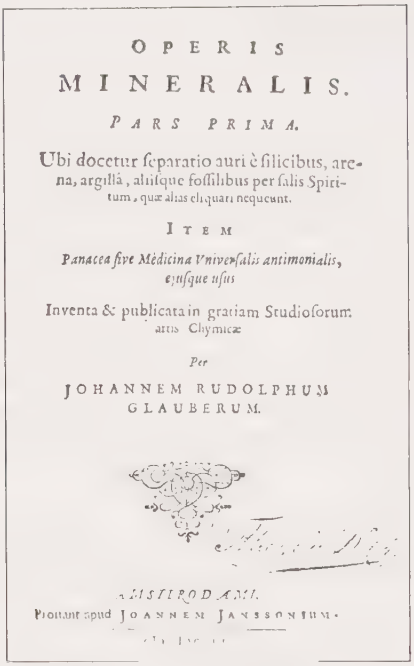
5. GLAUBER, J. R. Vera ac perfecta descriptio qua ratione ex vini fecibus. Bonum plurimumque tartarum sit extrahendum. 28 pp.

Amsterdam, Janssonius, 1655.

6. GLAUBER, J. R. Apologia contra mendaces christophori farneri Calumnias. With title-vignette. 94 pp.

Amsterdam, Janssonius, 1655.

7. GLAUBER, J. R. Prosperitatis Germaniae pars prima. In quâ de vini, frumenti, & ligni concentratione, eorumque utiliore, quam hactenus, usu agitur . . . 118 pp. Amsterdam, Janssonius, 1656. 4200.–


OPERIS
MINERALIS.
PARS PRIMA.
Ubi docetur ſeparatio auri è ſilicibus, arena, argillâ, aliiſque foſſilibus per ſalis Spiritum, quæ alias eliquari nequeunt.
ITEM
Panacea ſive Mèdicina Univerſalis antimonialis, ejuſque uſus
Inventa & publicata in gratiam Studioſorum artis Chymicæ
Per
JOHANNEM RUDOLPHUM GLAUBERUM.
AMSTELODAMI.
Proſtant apud JOANNEM JANSSONIUM.

COLLECTION OF EARLY EDITIONS in a well preserved and fresh volume from the library of the Genèvois scientist François Isaac Mayor (1779–1845).

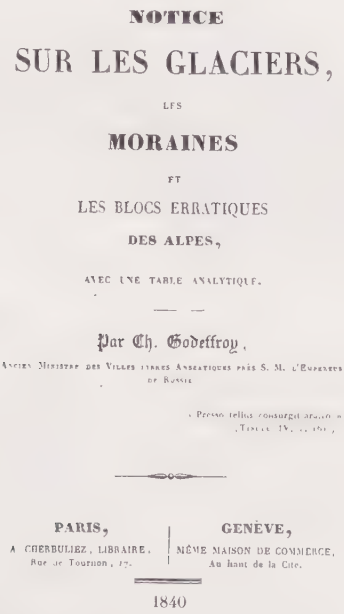
Johann Rudolf Glauber (1604–1670) has justly been called the *best practical chemist of his day and the first industrial chemist*. His instruction were instrumental in preparing the way for the chemical revolution of the next century. In his own estimation, however, the final goal of his labors was the perfection of the material world, capped by the preparation of the philosopher's stone.

One of his most important works is the three-part tract on minerals. Glauber discusses in the chapter on the origin of ore deposits the opinion that if this is not the actual lake of fire prepared for sinners the latter must at least be situated somewhere in the immediate vicinity. He also discusses of the arrangement of thew metallic veins in the earth resembling a tree with its branches growing up from the center of the earth. He states that there is a continuous transformation of the baser into the nobler metals going forward in nature, which in the course of time will result in the final passage of all these into gold. Hence it is that miners, when they come upon some mineral substance which is still ‚immature' or ‚unripe' – bismuth, for example, or cobalt or zinc – and assaying it for silver find that there is in it none of the precious metal, always say that they have opened up the vein too soon and before it had reached maturity. If, however, some years later, they resume work on this ore body which, in the meanwhile, has been exposed to the air, they frequently find that it is now quite rich in silver. It was indeed the aim the alchemists, believing firmly that this transmutation of the baser into the nobler was taking place in all parts of the earth's crust where the conditions are favourable, to bring about in their laboratories the same transmutation of the baser metals into gold but to carry out the change more rapidly.

The *Pharmacopoea Spagyrica* is a collection of the medical preparations that Glauber found most reliable. Indeed, most of the products of Glauber's laboratory found eventual use in medicine. Although he preferred mineral remedies, Glauber nevertheless devoted considerable space in the *Pharmacopoea* to proving his skill in more traditional areas. He suggested a new way to prepare essences of herbs by separating and recombining their oils, spirits and salts.

The political uncrtainties of the thirty Year's War persuaded Glauber to leave Germany about 1639 where he apparently stayed until 1650 only to return for a brief spell of five years to his fatherland. He left again this time never to return in 1655. The move was undoubtedly related to a bitter dispute with Christopher Farner, who had stolen some of his processes and had slandered his work and character. We find a description of the villain in tract No. VI here.

Hoover Collection (I) lists only a later issue, no. 364; Adams, Birth and Development of the Geological Sciences, pp. 288; Ferguson I, 326; Partington II, pp. 341–361.



NOTICE

SUR LES GLACIERS,

LES

MORAINES

ET

LES BLOCS ERRATIQUES

DES ALPES,

AVEC UNE TABLE ANALYTIQUE.

Par Ch. Godefroy,

ANCIEN MINISTRE DES VILLES HANSEATIQUES PRÈS S. M. L'EMPEREUR DE RUSSIE.

PARIS,
A. CHERBULIEZ, LIBRAIRE,
Rue de Tournon, 17.

GENÈVE,
MÊME MAISON DE COMMERCE,
Au haut de la Cité.

1840

82 GODEFROY, KARL (CHARLES). Notice sur les Glaciers, les Moraines et les Blocs Erratiques des Alpes. Avec une Table Analytique. 3 unn. leaves, 112 pp. Tall-8vo. Original printed wrappers nicely bound in modern half calf, gilt lettering on spine.

Paris & Genève, Cherbuliez, 1840. 680.–

FIRST, ORIGINAL & ONLY EDITION. Copy on large paper with wide margins, entirely uncut.

The pioneering work on glaciology by Charpentier (see item no. 38), Gruner, Hugi, Agassiz e. a. I have been able to list in my previous catalogues in the series BIBLIOTHECA HELVETICA, parts I to XX, from time to time. However, I have never been able to catalogue a copy of the scarce Godefroy on glaciers, so far. Here it is now. Charles Godefroy (1787–1848) resident minister at St. Petersburg (Leningrad), travelled widely in Piemont and Savoy in the years 1838 and 1839 and collected data on glaciers while staying in these parts. He published his observations in the present slim volume which he dedicated to the great Auguste-Pyrame de Candolle in Genève.

Poggendorff I, 919; Ward & Carozzi, Geology Emerging, No. 929; not mentioned by Studer, Zittel e. a.

Founder of Palaeobotany – Splendid Illustrations

83 GOEPPERT, HEINRICH ROBERT. Abhandlung, eingesandt als Antwort auf die Preisfrage: „Man such durch genaue Untersuchungen darzuthun, ob die Steinkohlenlager aus Pflanzen entstanden sind, welche an den Stellen, wo jene gefunden wurden,

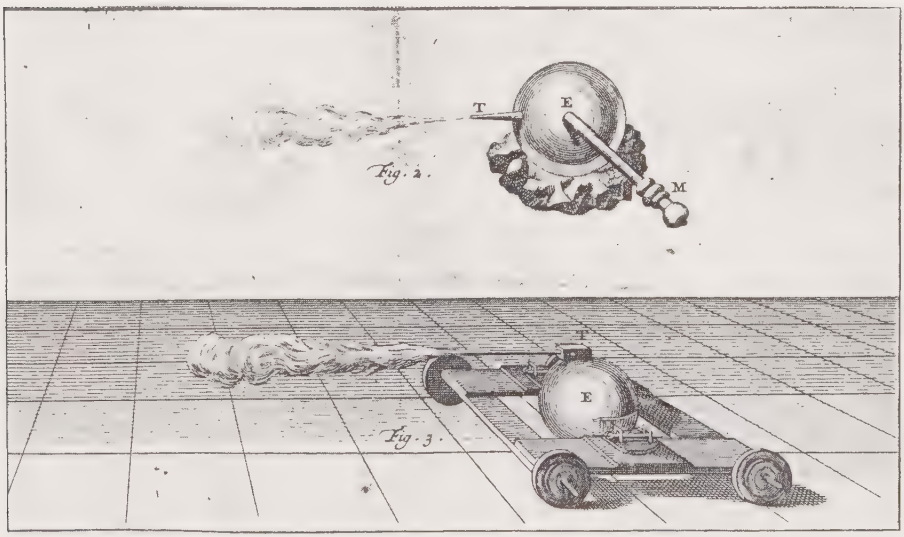
wuchsen...“ Illustrated by the large lithographed folding-out map, 22 very large lithographs, one of them in fine contemporary colouring. 2, XVIII, 300 pp. 4to. Original printed blue paper boards.

Leiden & Düsseldorf, Arnz & Co., 1848. 1400.–

FIRST & ONLY EDITION in a very fresh, unopened and entirely uncut copy.

„Heinrich Robert Goeppert (1800–1884) studierte Medizin, promovierte und wandte sich zuerst der Pharmazie zu. Sein grosses Interesse aber galt der Palaeontologie und Botanik. In zahlreichen Veröffentlichungen bewiess er sein grosses Fachwissen. Als Nachfolger des grossen Nees von Esenbeck wurde er 1852 mit der Übernahme dessen Lehrstuhles zugleich auch Direktor des Breslauer botanischen Gartens, den er mehrfach reformierte. Goeppert's literarisches Lebenswerk gründet sich auf exakte experimentelle Studien. Hervorragende Bedeutung kommt Goeppert's Arbeiten über fossile Pflanzen zu, die ihn zum Begründer der Paläobotanik in Deutschland werden liessen. Seine Untersuchungen über die Steinkohle und den Versteinerungsprozess sowie die anatomische Struktur fossiler Hölzer fussen auf sorgfältigen Experimenten und mikroskopischen Beobachtungen, die nicht nur für die Klassifizierung vorweltlicher Pflanzen, sondern auch für die Abstammungsverhältnisse rezenter Pflanzengruppen entscheidende Aufschlüsse brachten. *Sein Werk beeinflusste die Lagerstättenforschung massgebend* und hat heute noch grosse Bedeutung in der Bergbauliteratur.“ (NDB).

NDB VI, 519 ff.; Poggendorff I, 921–2; Zittel, Geschichte der Geologie, 782.



First Jet Propulsion Illustration

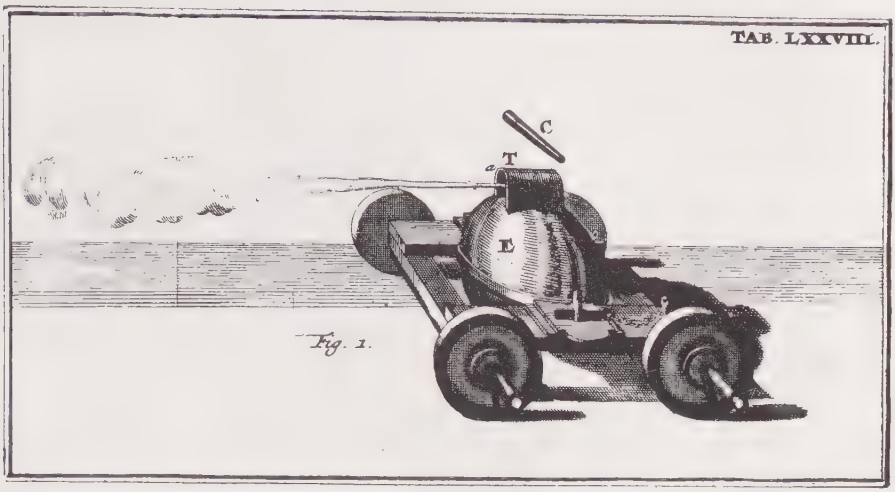
84 'S-GRAVESANDE, WILLEM JACOB. Physices Elementa Mathematica, experimenta confirmata. Sive introductio ad philosophiam Newtonianam. 2 volumes. Titlepages in red and black and with engraved vignettes. Illustrated by a series of 72 splendid folding-out engraved plates. 13 unn. leaeves, 345 pp., 2 unn. leaves; 4 unn. leaves, 199 pp., 6 unn. leaves. 4to. Contemporary vellum with spine titles.

Leiden, Peter van der Aa, 1721–1725. 2500.–

FIRST EDITION of volume two and second edition of volume one of one of the science of which 's Gravesande was the earliest and most influential exponent. The first edition of volume one ws published in 1720. The work which enshrined the author's scientific reputation, was constantly corrected and amplified in later editions by 's-Gravensande himself.

The paper is browned throughout; a well preserved set.

DSB V, 509 ff.; Cohen, Franklin & Newton, pp. 234 ff.; Wheeler-Gift 252 b; Zeitlinger/Sotheran, 1627.



Sumptuously Illustrated Encyclopedia of 18th Century
Physics – Optics – Early Jet Propulsion etc. etc. etc.

85 'S-GRAVESANDE, WILLEM JACOB. Physices elementa Mathematica, Experimentis Confirmata. Sive Introductio ad Philosophiam Newtonianam. Editio tertia duplo auctior. 2 tomes. Illustrated by 127 large engraved and folding-out plates of high documentary value; titlepages printed in red and black with engraved vignettes. 2 unn. leaves, LXXXVI, 2, 572 pp.; 1 unn. leaf, pp. 573–1073 (+ 1), 21 unn. leaves. 4to. Modern half calf, old gilt decorated spines mounted.

Leiden, Langerak & Verbeek, 1742. 3400.–

LAST & BEST EDITION, it was followed only by a French translation in 1746 (see my catalogue PILLARS OF WISDOM 300, 124). A well preserved and fresh set, old library stamps, descretely applied.

Willem Jacob 's-Gravensande (1688–1742) was the earliest influential exponent of the Newtonian philosophy in continental Europe, his major work, the „Elemens . . .“ being widely read not only there but also in Britain and America, where it largely influenced Benjamin Franklin's early studies.

Before lecturing as professor of mathematics and astronomy at Leiden University, 's-Gravensande practised law until the year 1717. His scientific reputation is enshrined in the justly famous present treatise. The book was at once welcomed by many scholars and not only on account of the brilliant illustrations depicting the experiments conducted by the author for which he had accumulated an ever larger collection of apparatus.

In the first volume 's-Gravensande traverses the theory of matter, elementary mechanics, the five simple machines, Newton's laws of motion, gravity, central forces, hydrostatics and hydraulics, and pneumatics (including a treatment of sound and wave motion). The second volume contains chapters on fire, modeled on Boerhaave's ideas rather than Newton's, in whose manifesstations he includes *Electrical Phenomena*. There follow two books on optics inclouding some splendid illustrations of the MAGIC LANTERN, of fine TELESCOPES and other optical instruments, etc.; one book on the system of the world, and a final book entitled „The Physical Causes of the Celestial Motions“ including the treatment of the movement of the earth and the density of the lunar surface.

Of particular interest a section in the second volume describing a vehicle propelled by repulsion. This is also illustrated with a fine full page plate depicting a four-wheeled vehicle propelled by what looks like steam or jet propulsion.

Cohen, Franklin & Newton, pp. 234–243; Wheeler-Gift 252b; Zeitlinger, 1627.

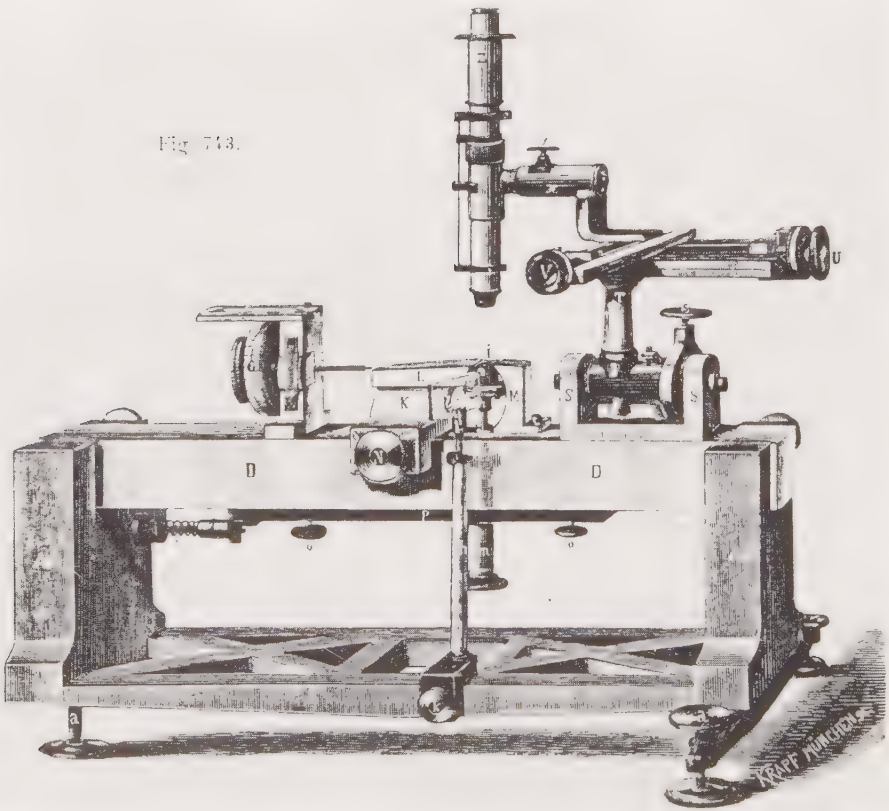
86 GRAY, ANDREW. The Theory and Practice of Absolute Measurements in Electricity and Magnetism. In Two Volumes. With 197 woodcut illustrations in the text. XIV, 518, 2 pp.; XXIV, 4, 346 pp. & XX pp., pp. 347–868. Thick-8vo. Original green cloth, gilt lettering on spines.

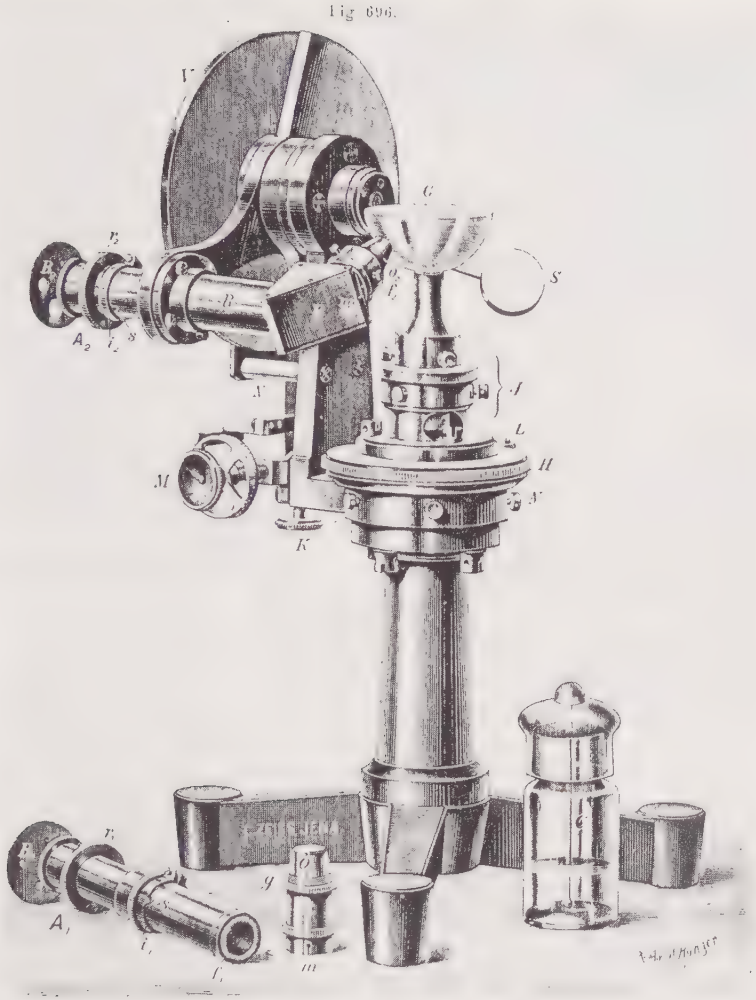
London, MacMillan, 1888–1893. 680.–

FIRST EDITION in a well preserved and fresh set; old ownership-stamps cutt-off from titlepage or halftitles.

Andrew Gray (1847–1925), professor of physics at Glasgow university in 1884 published a small compendium on absolute measurements which went out of print in a few years. „When the question of the issue of a second edition arose, it was thought desirable to extend the plan of the former book so as to make the new work a fairly complete treatise on the absolute measurement of electric and magnetic quantities. It has not been my aim to produce a work dealing with mere manipulative processes or a collection of practical rules, but one in which should be welded together in some degree at least, the practice of absolute measurements and the mathematical theory of electric and magnetic phenomena“ (author's preface)

Poggendorff IV, 530, Wheeler-Gift I, 2358a (only first volume!)





Inscribed Copy
Physical Crystallography
Pioneering Work

87 GROTH, PAUL HEINRICH VON. Physikalische Krystallographie und Einleitung in die krystallographische Kenntnis der wichtigsten Substanzen. Vierte, neubearbeitete Auflage. Illustrated by 3 coloured plates and 750 woodcuts in the text. XIV, 820 pp. Large 8vo. Contemporary private half cloth, original printed wrappers,

Leipzig, Engelmann, 1905. 650.–

FOURTH & DEFINITIVE EDITION in a fine and fresh copy with the author's presentation inscription for his colleague, the physicist Leo Graetz (1856–1941) on the bound-in original frontwrapper: „Seinem Coll(egen) Graetz m(it) fr(eundlichen) Gr(üssen). P. Groth."

Paul Heinrich von Groth (1843–1927) was one of the founders of scientific crystallography. Many of his views on morphology and isomorphism, and on chemical crystallography in general have become firmly embodied in chemical literature. Furthermore, the remarkable advances in our knowledge of

crystal structure as the result of the development of X-ray analysis, dating from von Laue's-Knipping's- and Friedrich's discovery in 1912, are in a large measure due to Groth's long and enthusiastic advocacy of the point system theory of crystal structure.

In 1870 Groth began the lectures that he published in 1876 as the textbook „Physikalische Krystallographie". With his students he systematically investigated the optical, thermal, elastic, magnetic, and electrical properties of crystals. In 1871 Grothe improved the polariscope, the stauroscope, the axial-angle instrument, end the goniometer and combined them into a universal instrument. In 1890 he simplified the reflecting goniometer and modified Koch and Warburg's device for determining the coefficients of elasticity in circular plates. His most important finding came in 1876, where he determined that crystallography equivalent orientations are also always physically equivalent und hence that every geometric plane of symmetry of a crystal is also a physical plane of symmetry. This discovery became of the utmost importance for the production of the famous computer chips in the seond half of the 20th century.

In 1895, in the third edition of his great textbook, Groth presented for the first time a derivation based on Sohncke's ideas of the crystal forms from the simplest to the highest symmetry and discussed the theory of the space lattice. In 1947, Nobel Price Laureate Max von Laue in his history of physics remarked that during the period in which other physicists and mineralogists showed scant interest in the apce lattice theory, Groth mainted, through his teaching in Munich, the Sohnckian idea.

His textbook is a very good example for shedding some light on the unsolved question whether it is better to collect important scientific texts in its first edition as is customary done, or in its best edition. Here, the definitive fourth edition it the edition to have, because it contains all of Groth's discoveries and inventions for the first time in print.

DSB V, 556 ff.; NDB VII, 167 ff.

One of the Most Remarkable Books on Physics of all Times
The First Electrical Generator-Invention of the Air Pump

88 GUERICKE, OTTO VON. Experimenta nova Magdeburgica de vacuo spatio . . . variis aliis experimentis aucta; Quibus acceserunt simul certa quaedam de aeris pondere circem terram, de virtutibus mundanis, et systemate mundi planetaris, sicut et de stellis fixis, ac spatio illo immenso, quod tam intra quam extra eos funditur. Illustrated with a fine engraved frontispiece-title, the brilliant engraved portrait, 2 large folding engraved plates and 20 magnificent engraved plates, of which 7 are full page. XIV, 244, 4 pp., 1 errata leaf. Folio. Contemporary vellum.

Amsterdam, Joh. Janssonius a Waesberge, 1672. 12 800.–

FIRST-ORIGINAL-EDITION of Otto von Guericke's celebrated work, one of the great scientific classics of all time.

Otto von Guericke (1602–1686), as the scion of a patrician family long established in Magdeburg he was destined to participate in political life. He studied law in several of the German universities and in Leyden he occupied himself with mathematics and mechanics. Indeed, Guericke had been preoccupied ever since with the question of the definition of space. Descartes conception of space and matter as equivalent and his denial of a vacuum led the convinced Copernican Guericke to propose an experiment desgined to resolve the old conflict between plenists and vacuists. After several years of experimenting he succeeded, contrary to legend, in performing a demonstration with a team of horses for the first time in Magdeburg in 1657 (and not in Regensburg in 1654) and repeated at court in Berlin in 1663: THE FAMOUS EXPERIMENT in which he placed together two copper hemispheres, milled so that the edges fit together snugly; he then evacuated the air from the resulting shere and showed that a most heavy force could not pull them appart. The famous experiment is beautifully illustrated on the often reproduced large folding plate in the present treatise.

Guericke made also other, less dramatic, public demonstrations of the effectiveness of air pressure on several occasions in Regensburg; these Regensburg experiments were reported by Caspar Schott in „Mechanica Hydraulico-Pneumatica (1657)" and were supplemented with additional information that Guericke communicated by letter. It was then Schott's book which stimulated Boyle, among others, to repeat and extend the experiments and to set to work upon an improved air pump. The dramatic demonstration of the pressure of air so overshadowed Guericke's work in electricity that little attention was paid to his electrical experiments by his contemporaries.

Ottonis de Guericke
EXPERIMENTA
Nova (ut vocantur) Magdeburgica
De
VACUO SPATIO.
Amstelodami
Apud Joannem Jansonium à Waesberge. 1672.

The science of Electricity owes to Guericke a debt for his invention, in 1660, of the FIRST ELECTRICAL MACHINE. This machine is described in the present treatise and is shown in illustrations. Here he also described electrical conduction and electric repulsion. Gilbert, in his famous work, had not only failed to notice repulsion, he denied its existence; Guericke recognized the significance of repulsion and experimented with it. The construction of his electrical machine, THE FIRST ROTATING GENERATOR, was basically a sulphur ball revolving on a shaft.

Beginning with the Guericke electrostatic machine, man's interest in electricity steadily increased. From this first sphere, the size of a shild's head, others were built of increasing size and complexity until sparks five feet long were obtained. With these a more exact knowledge of the behaviour of the electric charge and electrified bodies was made possible. Guericke was also the first to prove experimentally the propagation of sound through air; he DISCOVERED THAT SOUNDS ARE TRANSMITTED LIKEWISE THROUGH WATER AND EVEN THROUGH SOLIDS.

First four leaves with tear inside edge but a complete and good copy!

Horblit, 100 Books Famous in Science (a poor copy!); No. 44; Dibner, Early Electrical Machines, p. 13 ff.; – Ten Founding Fathers of the Electrical Science, pp. 13 ff.; – Heralds of Science, No. 55; Sparrow, Milestones of Science, 90; Wheeler-Gift No. 170.

Magnificent Plates
Source of Inspiration for Paul Klee & Wasili Kandinsky

89 HAECKEL, ERNST. Kunstformen der Natur. Erste (&) Zweite Sammlung in two volumes. Illustrated by a total of 100 large fullpage coloured lithographs with descriptive texts. Folio. Original green pictorial cloth.

Leipzig & Wien, Bibliographisches Institut, 1899–1904. 3500.–

FIRST EDITION of this splendid publication with its magnificent large coloured plates. Originally published in ten installments plus a supplement, the present set is in its original published form and publisher's binding.

„Mit heissem Kampfe hatte das 19. Jahrhundert für Haeckel geendet, mit heissem Kampfe das 20. für ihn begonnen. Die Welträtsel, die Lebenswunder, die Monismusthesen, die Gründung des Monistenbundes, die Berliner Vorträge, der Fall Reinke bezeichnen die Etappen dieses Kampfes. Aber um diesselbe Zeit sandte Haeckel zwei Werke in die Welt hinaus, die selbst seinen erbittertsten Gegnern Worte der Bewunderung abnötigen müssen, zwei wahre Friedenswerke, die ein verklärendes Licht werfen auf die Lebensarbeit des unentwegten Streiters. KUNSTFORMEN DER NATUR betitelt sich das eine, WANDERBILDER das andere dieser Werke. In jenem bietet Haeckel uns 100 farbige Tafeln, auf denen formenschöne Organismen aus dem Protisten-, Pflanzen- und Tierreich dargestellt sind, mit besonderer Berücksichtigung der mikroskopischen und marinen Formen, die größtenteils erst durch die Forschungen des 19. Jahrhunderts bekannt geworden sind und denen Haeckel selbst Jahrzehnte seines Lebens gewidmet hat.

Die Tafeln verfolgen den Zweck, diese verborgenen Schätze ans Licht zu ziehen und einem grösseren Kreis von Freunden der Kunst und der Natur sowohl ästhetisch als wissenschaftlich zugänglich zu machen. Haeckel glaubt, dass die moderne bildende Kunst und das moderne mächtig aufgeblühte Kunstgewerbe in diesen Kunstformen der Natur eine reiche Fülle neuer und schöner Motive finden werden. Jeder Tafel ist ein erklärender Text beigegeben, und in einem Supplementheft gibt Haeckel eine allgemeine Erläuterung, die im ersten Abschnitt das Verhältnis von Kunstform und Naturformen bespricht, im zweiten eine allgemeine Übersicht über die Grundformen der Organismen, ihre geometrische Bestimmung und ästhetische Bedeutung bietet, und im dritten eine systematische Übersicht über die Kunstformen der einzelnen Klassen der organischen Welt gewährt."

„Haeckels KUNSTFORMEN DER NATUR, erschienen 1899, wurden begierig ergriffen. Der Glaube an eine allem Organischen eingeborene Vernunft und Ordnung übertrug sich auch auf das Organische in der Gestaltung von Haus, Gerät und Schrift. Auf der Mathildenhöhe, am Rande von Darmstadt, auf grossherzoglichem Grund, wurde in kleinem Massstab die Idee van de Veldes verwirklicht. Seit 1899 entstand die vom Grossherzog Ernst Ludwig angeregte und geförderte Künstlerkolonie, begonnen von Josef Maria Olbrich, dem Sonntagskind des Jugendstils." (Schauer)

In a letter addressed to his friend Max Fürbringer Haeckel wrote

„Nachdem ich vorgestern von meiner kurzen (3wöchigen) Ferien-Reise nach Mittel-Italien zurückgekehrt bin, beeile ich mich, Dir endlich die noch fehlenden Hefte der KUNSTFORMEN

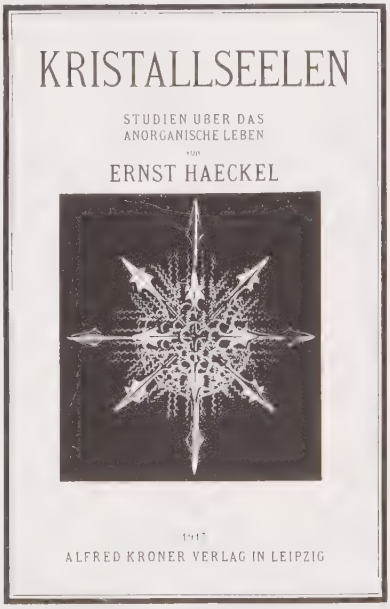
HAECKEL'S KUNSTFORMEN DER NATUR

DER NATUR zu senden (Heft 9–11 für Dich, Heft 1–7 und 9–11 für Braus. Zugleich lege ich für Dich & Brauer mein eben erschienenes letztes Buch bei, die *Lebenswunder* Ich fürchte, dass Dein scharfer kritischer Geist von diesem letzten Versuch meiner „biologischen Philosophie" wenig erbaut sein wird . . ."

Nissen ZBI, 1783; Schauer, Deutsche Buchkunst 1890 bis 1960, vol. I, p. 46; May, Haeckel, pp. 243 ff.

90 –. THE SAME. Another set, bound in two volumes. Private contemporary half morocco. 3200.–

A CLEAN WORKING COPY in a plain binding. Lacking the titlepage of the first part instead of which the original pictorial cover of the original issue is bound in. Complete and incl. the supplement which is often wanting in other copies. Fresh and clean inside.

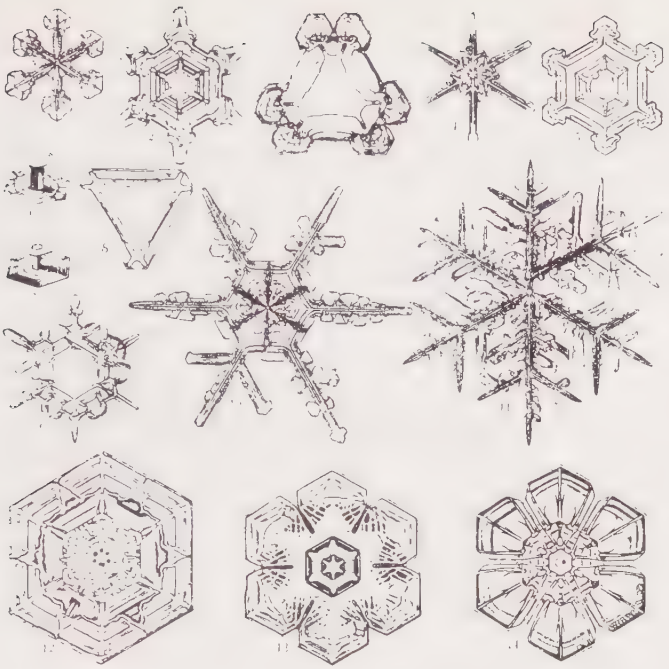


91 HAECKEL, ERNST. Kristallseelen. Studien über das anorganische Leben. Mit einer Tafel in Farbendruck und zahlreichen Abbildungen (i. e. 70) and seven synoptic tables. VIII, 152 pp. Tall-8vo. Bound in contemporary green cloth, spine lettering label, gilt lettering.

Leipzig, Alfred Kröner, 1917. 350.–

FIRST EDITION OF HAECKEL's LAST PUBLISHED BOOK (during his lifetime, that is). Uncut and well preserved copy.

„KRISTALLSEELEN? Was soll dieser neue naturphilosophische Begriff bedeuten? Vielleicht eine bodenlose metaphysische Spekulation? Oder ein phantastisches Traumgebilde der Dichtung? . . . Die Kristalle galten noch im Anfang unseres 20. Jahrhunderts fast allgemein für leblose starre Naturkörper. Ihre wissenschaftliche Behandlung fiel der Physik und Chemie, der Mathematik und Mineralogie anheim . . . Die Seelen anderseits galten fast allgemein als Erscheinung des organischen Lebens . . . Die tiefe Kluft zwischen „Kristallen und Seelen", der weite Abstand der beiden damit beschäftigten Wissenschaften, Kristallographie und Psychologie, bestand noch zu Anfang des 20. Jahrhunderts fast allgemein, wie jeder Blick in die betreffende umfangreiche Literatur . . . zeigt . . . alle Substanz besitzt Leben, anorganische ebenso wie organische; alle Dinge sind beseelt, Kristalle so gut wie Organismen . . ." (Haeckel's preface).



Discoverer of Liquid Cristals

92 –. THE SAME. DRITTE AUFLAGE. Mit fünf mehrfarbigen Tafeln und zahlreichen Abbildungen im Text. Edited by HEINRICH SCHMIDT. XIV, 2, 168 pp. Original blue half cloth, yellow printed boards.

Leipzig, Alfred Kröner, 1925. 320.–

THIRD EDITION in a very fine and fresh copy. The editor of the volume, Haeckel's disciple Heinrich Schmidt says in his preface:

„Die dritte Auflage der „Kristallseelen" erscheint textlich unverändert. Dagegen sind zwei neue Tafeln beigegeben: das farbige, in Offset reproduzierte Titelbild, auf dem die „Arbeit der Kristallseelen" bei den Radiolarien sowie einige Grundformen dargestellt sind, und eine Tafel mit mikrophotographischen Abbildungen von Kristallgruppen von Anilinsalzen (S. 38). Diese Tafel enthält eine Auswahl von zahlreichen Mikrophotogrammen gleicher Art, die der Entdecker der flüssigen Kristalle, *Otto Lehmann (see item nos 139A)* dem Verfasser der „Kristallseelen" zur Reproduktion für eine spätere Auflage zur Verfügung gestellt hatte.

In a letter to Haeckel, Lehmann states:

„Sehr erfreut war ich durch Ihren liebenswürdigen Brief, für welchen ich Ihnen herzlichst danke, und ganz besonders durch Ihre freundliche Bereitwilligkeit, mir gelegentlich Ihre zahlreichen Präparate von Biokristallen zeigen zu wollen, die mir bisher nur aus Bildern bekannt geworden sind. Ich habe schon in meiner Molekularphysik, Leipzig, 1889, Bd. 2, S. 487, darauf hingewiesen (die dortige Abbildung stammt aus *Brehms Tierleben*), wo auch eine Untersuchung von v. Ebner zitiert ist, gemäß welcher dieselben einheitliche feste Kristalle sind, welche nur deshalb nicht regelmäßige Form annehmen konnten, weil ihnen durch die lebende Substanz das Material an verschiedenen Stellen der Oberfläche in verschiedener Weise zugeführt wird. Dies stimmt auch mit einem Versuchsergebnis von S. Becker, gemäß welchem das Echinodermenskelett wenigstens streckenweise ein einheitlicher fester Kalkspathkristall ist, der nur mit vielen feinen Poren durchsetzt ist. Man kann hieraus schließen, daß in der eigentümlichen Form der Biokristalle die anisotrope Beschaffenheit des Protoplasmas, aus welchem sie sich ausgeschieden haben, zum Ausdruck kommt. Man wird sie also benutzen können zu eventuellen Untersuchungen über die flüssig-kristallische Natur des Protoplasmas . . ."

I cited this interesting letter in full (Lehmann wrote it by the way in November 1917) because of Nordenskjöld's remark on that volume „His final work, KRISTALL-SEELEN, is sufficiently characterized by its title" (p. 525).

VORLESUNGEN

ÜBER

DIE COMPLEXEN ZAHLEN

UND

IHRE FUNCTIONEN

VON

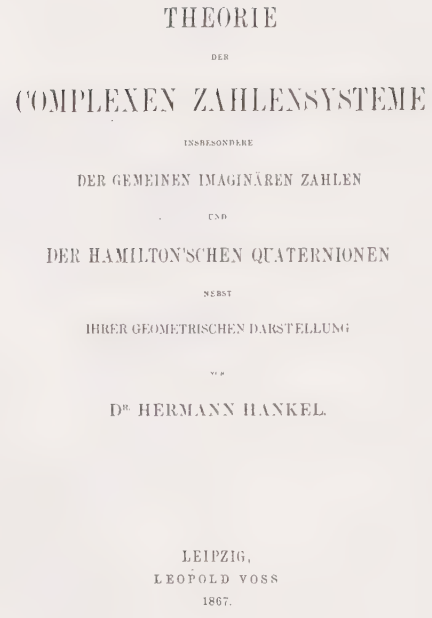
Dr. HERMANN HANKEL.

IN ZWEI THEILEN

I. THEIL.

THEORIE DER COMPLEXEN ZAHLENSYSTEME

LEIPZIG,
LEOPOLD VOSS.
1867



THEORIE

DER

COMPLEXEN ZAHLENSYSTEME

INSBESONDERE

DER GEMEINEN IMAGINÄREN ZAHLEN

UND

DER HAMILTON'SCHEN QUATERNIONEN

NEBST

IHRER GEOMETRISCHEN DARSTELLUNG

VON

Dr. HERMANN HANKEL.

LEIPZIG,
LEOPOLD VOSS
1867.

Theory of Complex Number Systems

93 HANKEL, HERMANN. Theorie der complexen Zahlensysteme insbesondere der gemeinen imaginären Zahlen und der Hamilton'schen Quaternionen nebst ihrer geometrischen Darstellung. XII, 196 pp. 8vo. Contemporary blue half morocco. gilt lettering on spine.

Leipzig, L. Voss, 1867. 475.–

FIRST EDITION of this very important volume in the history of algebra. An entirely uncut copy, well preserved with contemporary marginalia in the beginning of the volume.

Hermann Hankel's (1839–1873) contributions to mathematics were concentrated in three areas: the study of complex and higher numbers, the theory of functions, and the history of mathematics. In each field Hankel delivered outstanding works at an early age. His most important contribution in the first area was the „Theorie der complexen Zahlensysteme", to which he had hoped to add a treatise on the functions of a complex variable. This work constitues a lengthy presentation of much of what was then known of the real, complex, and hypercomplex number systems. In it Hankel presented algebra as a deductive science treating entities which are intellectual constructs. Beginning with a revised statement of George Peacock's principle of the performance of formal laws, he developed complex numbers as well as such higher algebraic systems as Moebius's barycentric calculus, some of Hermann Grassmann's algebras, and Hamilton's quaternions. Hankel was the first to recognize the significance of Grassmann's long-neglected writings and was strongly influenced by them. The high point of the book lies in the section (pp. 106–108) in which he proved that no hypercomplex number system can satisfy all the laws of ordinary arithmetic.

DSB VI, 95 ff.; Van der Waerden, A History of Algebra, 1985, pp. 191 ff.; MNE I, 297.

AN INTRODUCTION
TO THE
THEORY OF NUMBERS

BY

G. H. HARDY

Sadleirian Professor of Pure Mathematics in the University of Cambridge

AND

E. M. WRIGHT

Professor of Mathematics in the University of Aberdeen

OXFORD
AT THE CLARENDON PRESS
1938

Fundamental Modern Mathematical Text

94 HARDY, GODFREY HAROLD & E. M. WRIGHT. An Introduction to the theory of Numbers. XVI, 403 (+ 1) pp. Tall-8vo. Original blue cloth.

Oxford, at the Clarendon Press, 1938. 480.–

FIRST EDITION of a fundamental text in modern mathematics. A well preserved copy of a much sought after volume.

Godfrey H. Hardy (1877–1947) was generally recognized as the leading English pure mathematician of his time. His writings attest both his technical power and his mastery of English prose. He was professor of maths at Oxford; there he founded a flourishing school of research. Amongst his disciples we find the later father of cybernetics, Norbert Wiener, whose mathematical training was greatly influenced by Hardy.

DSB VI, 113 ff.; Heijenoort, From Frege to Gödel; A Source Book in Mathematical Logic, 1879–1931, pp. 224.

Inscribed by the Author

95 HARTREE, DOUGLAS R. Some Unsolved Problems in Numerical Analysis. In: Problems for the Numerical Analysis of the Future, Dept. of Commerce, Nat. Bureau of Standards Applied Maths. Series, XV". Illustrated 9 pp. 4to. Original printed wrappers.

Washington, 1951. 280.–

FIRST EDITION. On the frontcover the author's inscription in blue ink: „Dr. L. C. P. Miller with compliments Dr. Hartree".

The fascicle contains three more papers: Lefschetz, S. Numerical calculations in nonlinear mechanics – Friedman, B. Wave propagation in hydrodynamics and electrodynamics – Dantzig, G. B. Linear Programing.

Not in Randell's Bibliography!

Colour Tinted Earth Samples

96 HARTIG, FRIEDRICH KARL. Die Forstgeonomie und Lithologie. With a fine engraved titlevignette and a large engraved folding-out plate with numerous illustrations in contemporary handcolouring. XVI, 276 (+ 3) pp. Tall-8vo. Contemporary half calf with red and green spine labels.

Leipzig, Baumgärtner, 1810. 1800.–

FIRST EDITION in a very fresh and well preserved copy incl. the large folding-out table of coloured earth, soil and mineral samples which is often wanting in other copies. Harting's textbook, one of the very first of its kind in the history of modern soil science, appeared in the series „Die Hoch- und Niederwaldbehandlung" as part three and covers the geological, mineralogical part of forestry.

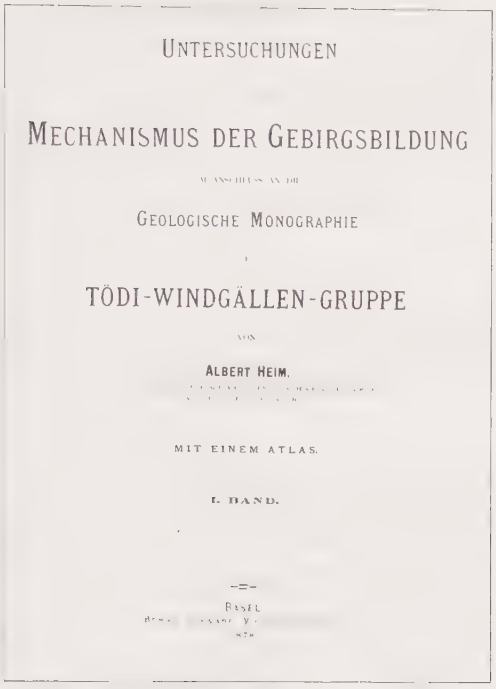
ADB X, 657 ff.; no copy in Ward & Carozzi's Geology Emerging (University if Illionis at Urbana-Champaign) Collection Catalogue.

Source Book in Geology

97 HEIM, ALBERT. Untersuchungen über den Mechanismus der Gebirgsbildung im Anschluß an die Geologische Monographie der Tödi-Windgällen-Gruppe. Mit einem Atlas. 2 Text- und 1 Atlas-Band. Illustriert mit den 17 doppelblattgroßen und zumeist farbigen Original-Lithographien. XIV, 346 SS.; 4, 246 SS. Large-4to. Fine half calf with spine lettering labels.

Basel, Schwabe, 1878. 1500.–

FIRST EDITION in a well preserved and fresh set. Es ist dies das erste Hauptwerk des großen Forschers Albert Heim (1849–1937). Die siebzehn Tafeln im Atlasband sind von ihm selbst gestochen worden. Seine große Zeichenkunst hat er ganz in den Dienst der Geologie gestellt und der Wissenschaft einen Einblick in den Gegenstand vermittelt, wie er von keinem Forscher zuvor auch nur annähernd geschaffen worden ist. Von der sorgfältigen tektonischen Analyse der Tödi-Windgällengruppe ausgehend, wendet er sich, aus seinen Beobachtungen folgend, der Dynamik der


UNTERSUCHUNGEN

MECHANISMUS DER GEBIRGSBILDUNG

GEOLOGISCHE MONOGRAPHIE

TÖDI-WINDGÄLLEN-GRUPPE

ALBERT HEIM.

MIT EINEM ATLAS.

I. BAND.

BASEL

Gebirgsbildung und ihren Gesetzen zu und rundet das Werk, immer weiter ausgreifend und in der Theorie von der Schrumpfung der Erde durch Abkühlung verankernd, zu einer umfassenden Monographie ab, die überall großen Eindruck machte und als ein *Hauptwerk der dynamisch-geologischen Literatur aller Zeiten* gilt.

Verh. d. Schweiz. Naturforsch. Ges. Bd. 118, SS. 330 ff. (1937); Green, Geology in the 19th Century, pp. 189 ff.; Mather-Mason, A Source Book in Geology, pp. 642 ff.

98 HEIM, ALBERT. Weltbild eines Naturforschers. Mein Bekenntnis. Illustrated by 28 plates and numerous illustrations in the text. 364 pp. 8vo. Original cloth.
Bern, 1942. 120.–

FIRST EDITION of this important autobiography and philosophy of science. A well preserved copy.

Original Etchings by Hans Erni with an Original Portrait & Autograph

99 HEISENBERG, WERNER – HANS ERNI. Das Naturgesetz und die Struktur der Materie – Natural Law and the Structure of Matter. Illustrated with 4 original etchings by Hans Erni. 89, 1 pp., 1 leaf. Large 8vo. Original red half morocco in slip case.
Stuttgart, Belser-Presse, 1967. 650.–

FIRST EDITION LIMITED TO 850 copies on Zerkall of which this is no. 405, signed by the artist. A fine publication with the spirited etchings by Hans Erni.
Tipped in is an original portrait photograph with Werner Heisenberg's autograph signature.

100 HELMHOLTZ, HERMANN VON. Über die Erhaltung der Kraft (1847). Edited by Wilhelm Ostwald. 60 pp. 8vo. Original grey printed cloth binding.
Leipzig, Engelmann, 1889. 1250.–

SECOND – FIRST COMPLETE – EDITION in a well preserved copy with F. Miescher's exlibris. Published as Ostwald's celebrated „Klassiker der Exakten Wissenschaften" number one'

One of the great classical papers in the history of all sciences setting forth the philosophical and physical basis of the conservation of energy. All kinds of energy, heat, light, electricity, and all chemical phenomena, are capable of transformation from one to the other, but are indestructible. Helmholtz' work led to the construction of efficient heat engines ad eventually to the liquefaction of all known gases.

Horblit, 100 Books Famous in Science, 48; Dibner, Heralds of Science, 159; PMM 323; DSB VI, 243 ff.; König, 6.

101 HENSEL, KURT. Zahlentheorie. XII, 356 pp. 8vo. Original cloth.
Berlin & Leipzig, Göschen, 1913. 150.–

FIRST EDITION in a fresh copy from the library of Jakob Ackeret.

Hertz's Principle of the Unity of Electric Force

102 HERTZ, HEINRICH R. Über die Beziehungen zwischen den Maxwellschen electrodynamischen Grundgleichungen und den Grundgleichungen der gegnerischen Electrodynamik. 20 pp. in: Annalen der Physik, Neue Serie, Band 23, Thick-8vo. Contemporary half cloth.

Leipzig, Barth, 1884. 865.–

FIRST EDITION of one of the basic papers by Heinrich Hertz (1857–1894) before the publication of his famous demonstration of what Maxwell had predicted, that electromagnetic waves radiated in space with the speed of light.

Like Ampère before him (see item no. 5 ff.), who had discovered the mutual action of currents on the principle of the unity magnetic force, Hertz now posed in the theoretical paper „On the Connection between Maxwell's Fundamental Equations and those of the other System of Electrodynamics" the PRINCIPLE OF THE UNITY OF ELECTRIC FORCE. Extending Faraday's analogy between electric currents and changing magnetic systems or ‚magnetic currents', he provided a simple proof of the validity of Maxwell's fundamental equations.

cf. Dibner, Heralds of Science No. 71; Taton, History of Science 19th Century p. 217 ff.

And bound with:

RÖNTGEN, WILHELM CONRAD. Neue Versuche über die Absorption von Wärme und Wasserdampf. 2 parts in one volume. Illustrated with 2 large engraved plates of which one depicts in 22 illustrations Roentgen's experimental apparatus. In: Annalen der Physik . . .

New Series, volume 23, pp. 1–49 & 259–298. 8vo. Contemporary half cloth.

Leipzig, Barth, 1884.

FIRST EDITION of two important papers by Wilhelm C. Roentgen. By means of a very simple but very sensible air-thermometer, which he had constructed for that purpose, Roentgen indeed proved that vapour absorbes caloric rays. A fine copy of a rare volume which contains several other important papers, e. g.

Glaser, Roentgen, p. 60 and No. 26.

103 HERTZ, HEINRICH R. Über den Durchgang der Kathodenstrahlen durch dünne Metallschichten. pp. 28–32 in: Annalen der Physik, Neue Folge, vol. 45. Thick-8vo. Contemporary half morocco, gilt decorated spine.

Leipzig, A. Barth, 1892. 350.–

FIRST EDITION in a well preserved and clean copy; exlibrary stamps. Heinrich Rudolf Hertz, one

of the most brilliant of 19th century physicists, did some original research in cathode rays and their power of penetrating metal foils, the results of which he presented in this paper. They were to become of great importance in the early part of the 20th century in nuclear physics. – DSB VI, 340 ff.

The volume contains several additional papers of equal importance, e. g.
WARBURG, EMIL: Über die electrische Kraft an den Electroden und Electrisirung des Gases bei der Glimmentladung, pp. 1–27.
RÖNTGEN, W. CONRAD: Über die Constitution des flüssigen Wassers (&) Kurze Mittheilung von Versuchen über den Einfluss des Druckes auf einige physikalische Erscheinungen. pp. 91–107. etc. etc.

104 HESS, HANS. Die Gletscher. Illustrated by 8 plates, 4 maps and numerous woodcuts in the text. XI, 1, 426 pp. Large-8vo. Nice contemporary light brown half calf, green spine lettering piece.

Braunschweig, 1904. 650.–

FIRST EDITION in a nice and fresh copy.

Hans Hess (1864–1940) was one of the most important glaciologists of modern times. „Zusammen mit Adolf Blümcke betrieb er selbständige Forschungen, die auf die Gesamterscheinung des Gletschers, das Problem der Gletscherbewegung, den Eishaushalt und die Wirkung des fließenden Eises auf den Untergrund, auf Entstehung und Abschmelzung gerichtet waren. Als Mathematiker und Physiker verstand es Hess, diese Fragen auch theoretisch zu behandeln. 1893 begann er und Blümcke mit der systematischen Untersuchung des Hintereisferners in den Oetztaler Alpen, an dem bis 1931 jährlich Geschwindigkeits- und Abschmelzmessungen durchgeführt wurden. Erstmalig in der Gletscherforschung bestimmten sie durch ihre berühmt gewordenen Tiefbohrungen in den Jahren 1899–1910 die Eisdicke im Abschmelzbereich, und bei insgesamt 12 erfolgreichen Bohrungen wurde mit einer Maximaltiefe von 224 m der Felsuntergrund erreicht. Durch Laborversuche im Eiskeller einer Nürnberger Brauerei (Hess hielt in dieser Stadt ein Lehramt inne) untersuchte er die physikalischen Eigenschaften des Eises unter verschiedenen Druck- und Temperaturbedingungen und überprüfte die Strömungstheorien von Finterwalder an Gletschermodellen aus Paraffin. Seine Zusammenfassung über den damaligen Zustand und Wissensstand der Gletscherforschung und ihrer Grenzgebiete legte er in seinem einzigen Buch (neben sehr zahlreichen Zeitschriftenartikeln) vor. Sie sind auch heute noch nicht überholt und haben viele Anregungen für weitere Arbeiten gegeben.

NDB IX, 5 ff.

Classical Treatise

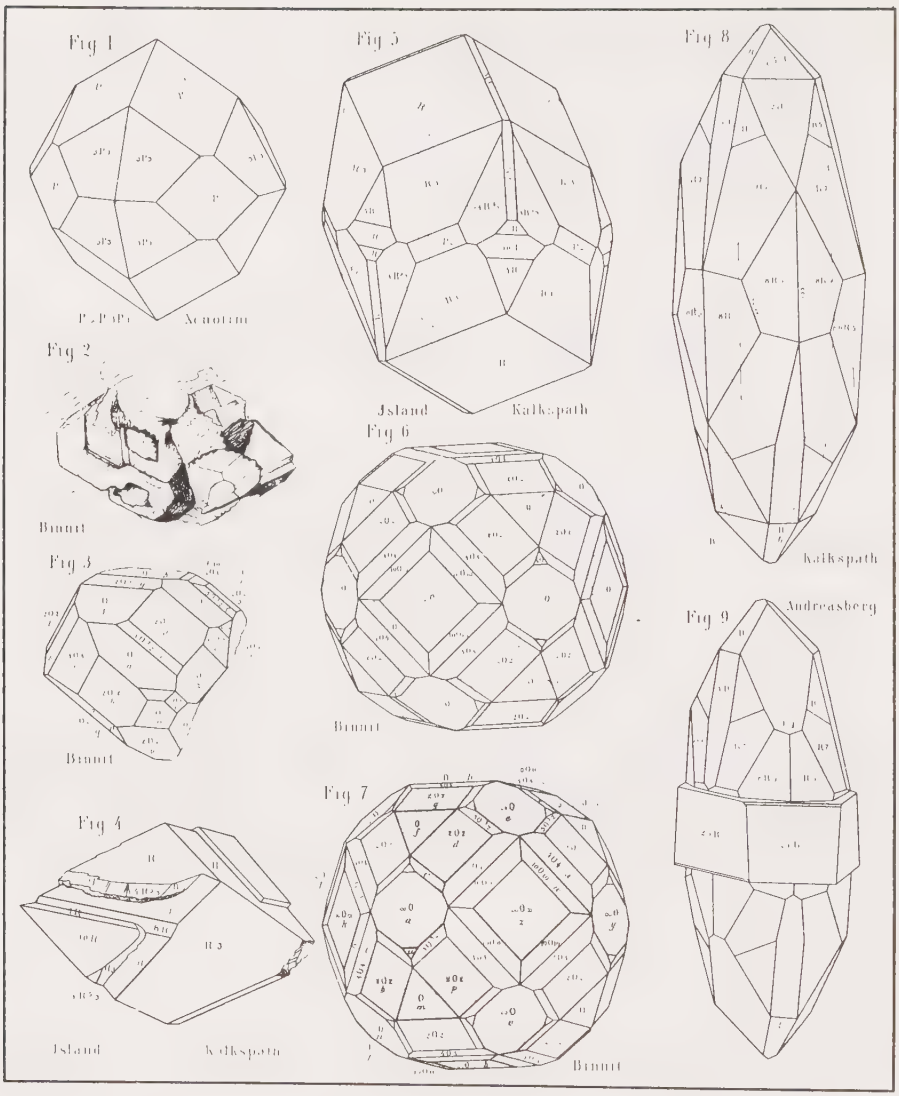
105 HESSE, OTTO. Vorlesungen über analytische Geometrie des Raumes insbesondere über Oberflächen zweiter Ordnung. XIV, 2, 368 pp. 8vo. Contemporary green half cloth, gilt lettering on spine.

Leipzig, Teubner, 1861. 450.–

FIRST EDITION.
Otto Hesse (1811–1874) studied mathematics and the natural sciences at Königsberg under such famous scientists as the astronomer Bessel, the mathematician Jacobi, who greatly stimulated his mathematical investigations, further under Richelot and F. Neumann. He continued to teach at his alma mater after graduation. Under his students we find Kirchhoff, Carl Neumann, Clebsch, Lipschitz e. a. He later gladly accepted a call to Heidelberg, for Robert Bunsen and Kirchhoff were there doing their important research in spectroanalysis.

Hesse's mathematical works especially the one present here, are important for the development of the theory of algebraic functions and of the theory of invariants. His achievements can be evaluated, however, only in close connection with those of his contemporaries, especially his teacher Jacobi.

Coolidge, History of Geometrical Methods, pp. 153; Cajori, History of Mathematics, 311; DSB VI, 356 ff.; Van der Waerden, History of Algebra, 117 & 125.



Fundamental Research in Crystallography

106 HESSENBERG, FRIEDRICH. Mineralogische Notizen. Parts 1 to 11 plus New Series No. 1 (all that was published). Illustrated by 37 large fullpage-seized lithographic plates. Together 488 pages. 4to. Original wrappers.

Frankfurt, Senckenberg, 1857–1874. 1400.–

FIRST EDITION of the entire set which is present here in a complete series as issued and which would be very hard to find anywhere on the market. The original offprints from the „Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft".

VORLESUNGEN

ÜBER

ANALYTISCHE GEOMETRIE

DES RAUMES

INSBESONDERE

ÜBER OBERFLÄCHEN ZWEITER ORDNUNG

VON

DR. OTTO HESSE,

ORD. PROFESSOR AN DER UNIVERSITÄT HEIDELBERG

LEIPZIG,

DRUCK UND VERLAG VON B. G. TEUBNER

1861

– No. 105 –

Friedrich Hessenberg (1810–1874), gold- and silversmith in his native Frankfurt, was used to deal with precious and semi-precious stones in his profession. He became very excited about minerals and crystalls and started to study chemistry and physics on his own and he soon „gelang es, die volle Höhe der Wissenschaft zu gewinnen, von der aus er bereits 1854 eine erste Aufsehen erregende krystallographische Arbeit in den Schriften der Senckenbergischen Gesellschaft, veröffentlichte. Durch die günstige Aufnahme dieser Erstlingsarbeit ermutigt, folgten nun bald in der selben Zeitschrift unter dem Titel „Mineralogische Notizen", elf Fortsetzungen (i. e. No. 1 plus eleven parts totalling 12 parts), in welcher über viele Mineralien grundlegende krystallographische Untersuchungen niedergelegt sind, wie über Sphen, Titanit, Kalkspath, Anhydrid, Gips, Wollastonite. Axinit, etc. Vortreffliche Zeichnungen begleiteten diese Abhandlungen . . . Sein erfolgreiches wissenschaftliches Streben ehrte die Berliner Universität, indem sie ihm das Ehrendoktordiplom verlieh und die bayerische Akademie der Wissenschaften dadurch, dass sie ihn zum korrespondierenden Mitglied ernannte." (ADB XII, p. 314)

Changing Ideas on the Structure of Electricity Printed in Gold

107 HITTORF, WILHELM. Über die Electricitätsleitung der Gase; Erste Mittheilung. Illustrated with 2 engraved folding plates. 31 pp. in: Annalen der Physik, volume 136. 8vo. In protective cloth case.

Leipzig, 1869.

and with:

HITTORF, WILHELM. Über die Electricitätsleitung der Gase. Zweite Mittheilung. In: Jubelband Poggendorff, Annalen der Physik, pp. 430–445. 8vo. Original publishers cloth, richly gilt decorated, all edges gilt; printed in gold throughaut.

Leipzig, 1874. 1800.–

FIRST EDITIONS of both papers incorporating some of the most important research results in the history of the discovery of *Cathode Rays* and marking an *Important step forward* towards the discovery of Röntgen's rays (see item no. 209).

Wilhelm Hittorf (1824–1914) researches on the migration of the ions and the character of the radiation from the cathode *marks an epoch in our knowledge of electrolysis.* His papers contain more explicit statements than had appeared before of the rectilinear character of the radiation from the cathode. Hittorf was the first to continue Faraday's work on electrolysis to an important extent. He made a careful quantitative investigation of the motion of the ions in electrolysis durcing passage of the current, which opened up the road to a knowledge of the internal constitution of electrolytes, such for example as dilute salt solutions. The 1874 „Jubelband" (present here in the rare deluxe issue) contains a total of 62 important papers:

KOHLRAUSCH, F. Über die Wirkung der Polarisation auf alternirende Ströme und über einen Sinus-Inductor; HELMHOLTZ, HERMANN. Die theoretische Grenze für die Leistungsfähigkeit der Mikroskope; MEYER, OSKAR EMIL. Hydraulische Untersuchungen; JOLLY, PH. Über die Ausdehnungscoefficienten einiger Gase, und über Luftthermometer; BOLTZMANN, LUDWIG. Über den Zusammenhang zwischen Drehung der Polarisationsebene und der Wellenlänge der verschiedenen Farben; WEBER, WILHELM. Über das Aequivalent lebendiger Kräfte; etc. etc.

A very fine copy of a very rare volume. *Printed in gold throughout!*

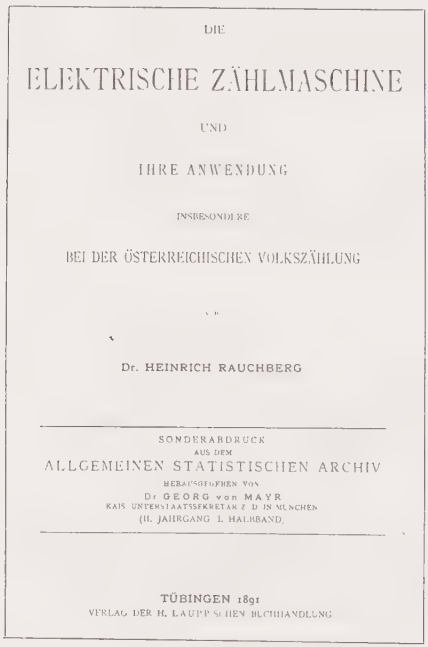
Cf. Taton, Science in the 19th Century pp. 224 ff.; Partington IV, 665 ff.; Source Book in Physics, pp. 561 (Hittorf).

108 HOGARD, HENRI. Recherches sur les glaciers et sur les formations erratiques des Alpes de la Suisse. IX, 320, 2 pp. Large 8vo. Contemporary half calf, red spine lettering piece.

Epinal, 1858. 345.–

FIRST EDITION in a well preserved copy. Hogard's work nicely rounds up the important collection of pioneering works on glacial geology offered in this catalogue, i. e.

AGASSIZ' Untersuchungen üder die Gletscher, 1840–41; CHARPENTIER'S Essai sur les glacies, 1841; FAVRE'S Recherches géologiques dans les parties de la Savoie, etc. 1867; Godefroy's notice sur les glaciers. 1840; HUGI'S Naturhistorische Alpenreise, 1830 etc. etc.


DIE

ELEKTRISCHE ZÄHLMASCHINE

UND

IHRE ANWENDUNG

INSBESONDERE

BEI DER ÖSTERREICHISCHEN VOLKSZÄHLUNG

Dr. HEINRICH RAUCHBERG

SONDERABDRUCK
AUS DEM
ALLGEMEINEN STATISTISCHEN ARCHIV
HERAUSGEGEBEN VON
Dr GEORG von MAYR
KAIS UNTERSTAATSSEKRETÄR Z D IN MÜNCHEN
(II. JAHRGANG I. HALBBAND)

TÜBINGEN 1891
VERLAG DER H. LAUPP'SCHEN BUCHHANDLUNG

– No. 109 –

Hollerith's Electric Tabulating System in the Austrian Census

109 HOLLERITH. – RAUCHBERG, HEINRICH. Die elektrische Zählmaschine und ihre Anwendung. Offprint from the „Allgemeines Statist. Archiv II/1". 52 pp. 8vo. Original grey printed wrappers.

Tübingen, Laupp, 1891. 2200.–

ORIGINAL EDITION in a well preserved copy, inscribed by the author.

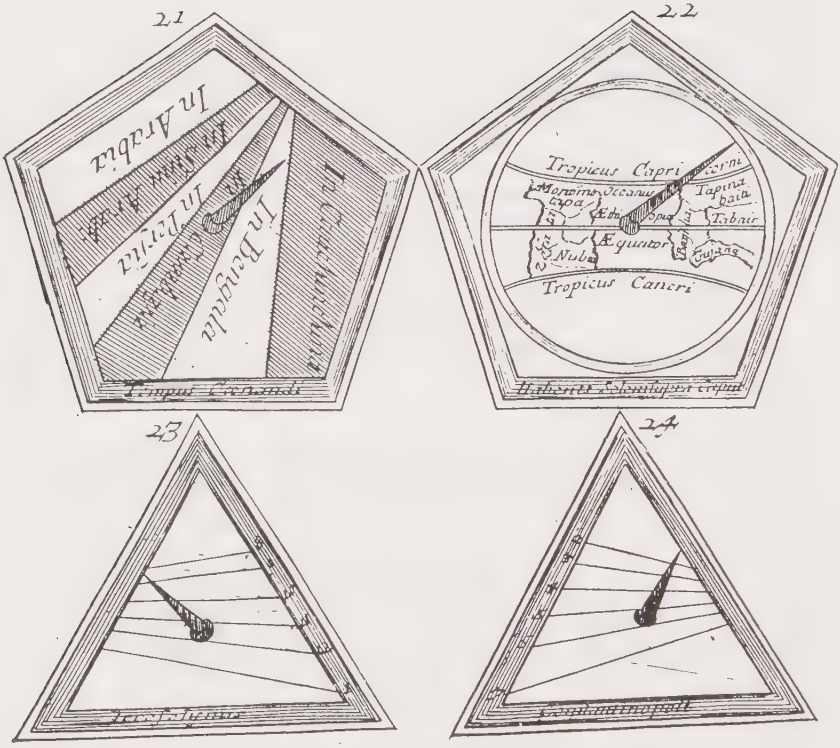
The urge to count heads is one of humanity's oldest impulses, and records of censuses are among our oldest intellectual artifacts. The census was not smerely a political exercise; in order to tax a populace and predict revenues, a government needed to know how many people there were. The Babylonians led the way. Some of the most famous ancient censuses were recorded in the Old Testament. No sooner did the children of Israel escape from Egpyt than God ordered Moses to take a census to establish how many fighting men Israeld could count on. Another biblical census is one that modern census takers wish had never happened. David was king in Israel in 1017 B.C., and he ordered a census. Many of the Israelites strongly resisted the counting, and David had to use the army. Nine month and twenty-two days later, the army reported the results: 1 300 000 warriors. According to the Bible, God was so angry at David's act that he gave the king the choice of three years of famine, defeat in battle, or three days of the plague. David opted for the plague, and 70 000 men died. Since then the notion that the Deity does not approve of censuses has passed down through the ages; even in our own time, census takers find pockets of religious (and political resistance if I may point to the situation in Germany where influential pressure groups of the green-red oppositon have so far sabotaged a new census taking) to the counting.

While preparing for the US Census of 1890, Hollerith had received inquiries from European countries eager to use his highly successful machines in their population counts. The inventor introduced his machines abroad, and the governments of Austria and Italy were among the first to employ the automatic machinery. Hollerith's plan, evidently couched to satisfy European patent laws, was to have at least some of his equipment built abroad. On receiving his Austrian patents, Hollerith signed a contract with the company of Otto Schaefler who became the first modern manufacturer of automatic tabulating machinery in Austria. The contract specified that Hollerith would furnish the plans for his system, while the Austrian firm would build a specified number of machines for that country's Census. The consequences of his action were unexpected as he later recalled: „I had the unfortunate experience with the Austrians which shows the ridiculousness of their patent laws. They were anxious to use the machines and ordered a number. I applied for an Austrian patent, but as it was impossible to have the machines made in Austria within the time allowed me, I had some sent over from America, simply as a matter of accommodation. When they arrived, the government promptly annulled my patents because the machines were not made in Austria."

The matter was worse, as the inventor discovered shortly before Christmas, 1890, when he read in a Vienna paper that some man claims to have invented Hollerith's machines; the article was illustrated with excellent descriptions and sketches. Hollerith literally bristled and launched himself into a lawsuit if necessary taking on the whole Austro-Hungarian Empire. The Austrian, however, agreed to compromise to avoid a lawsuit. But Hollerith would have none of it because he was convinced he could obtain better terms than his agent and indeed, under a newly drawn contract he would build a dozen tabulating machines for their Census, which although been taken would not be processed until 1891.

Before the Austrian Census was complete, Hollerith would see his machines successfully applied the censuses of Canada and Norway. But he would continue to be hurt by the Austrian's practice of never giving him credit for his invention. All, except the Austrians, say the Hollerith machines. The austrians say „Machine Electrique", he wrote a little later. So the title of our work here is consequently „Die elektrische Zählmaschine" and not „Hollerith's Zählmaschine".

Austrian, Hermann Hollerith. Forgotten Giant of Information Processing, pp. 79 ff.



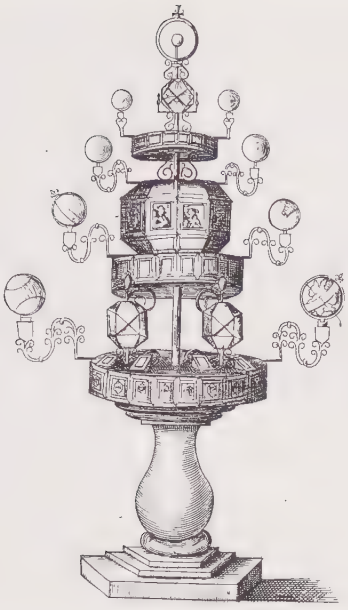
110 HOLWELL, JOHN. Clavis horologiae; or, a Key to the whole Art of Arithmetical Dyalling, in two parts . . . whereunto is annexed an Appendix . . . 2 parts in 1 volume. Illustrated by 39 engraved plates, some of them folding-out. 6 unn. leaves, 287 pp., 6 unn. leaves; 2 unn. leaves, 38 pp., 19 unn. leaves. Small-4to. Contemporary English dark brown calf, spine skilfully renewed with red lettering label.

London, Will. Bonny for Tho. Howkins, 1686. 2800.–

RARE FIRST EDITION of this famous volume of which only three copies are recorded in the USA and only one in England. It is the second edition of the Appendix which was first published at Liège in 1673. The author mentioned this fact on the main-titlepage; and he has also added a note to that effect after the titlepage of the Appendix.

At the end of the „Clavis Horologiae" is an advertisement in which Mr. Walter Hayes gives notice that all mathematical instruments, maps, globes, etc. are to be had at his shop next door to the Popeshead Tavern, at reasonable rates. Hayes is generally regarded as the most skilled mathematical instrument-maker of his day. Although there is a dampstain throughout the volume, it is a well preserved copy.

Wing H, 2517A (listing only 3 copies in the USA); Taylor, 453.



– No. 110 –

[Figure 1.—View Inside the Assay Laboratory]

– No. 68 –

110A. HOUGH, FRANKLIN B. Census of the State of New York for 1855; taken in pursuance of article third of the Constitution of the State, and of chapter 64 of the laws of 1855. Prepared from the original returns under the direction of Joel T. Headley, Secretary of State. With title woodcut-vignette. 2 unn. leaves, LXVI, 525 (+ 3 blank) pp. Folio. Contemporary red half calf, gilt lettering on spine.

Albany, Benthuysen, 1857. 1200.–

ORIGINAL EDITION. A well preserved copy from the George Washington Memorial Library and with the editor's handwritten presentation note in front,

„Jas. Killian Esq. with the kind regards of F. B. Hough"

Few nations have been as adept at taking the census as the United States. Since the Constitution went into effect, the USA has never missed a decennial census. The sensus taking began in 1790. The interviewing for the census took nine months and showed 3 893,637 Americans. By 1860 there were 31 440,000 Americans who needed to be counted. With the population growth came such a proliferation of questions that in 1850 Congress enacted a statutory limit of 100. With the result that the Secretary of State/NY, Mr. J. T. Headley initially remarks in his preface „in submitting the present Census to the State, I would remark, that the delay in its appearance has grown out of the immense amount of labor bestowed on the work."

The solution to this problem was to use some kind of mechanization. The first attempt came in the census of 1870, when machines invented by Col. Charles W. Seaton, were used. His machine was not going to get the Census Office out of its jam. It turned out, however, that Seaton had a young man working for him who would have the answer to the problem. He was HERMANN HOLLERITH from Austria, and he became, to a large extent, responsible for modern computing and data processing.

Shurkin, Engines of the Mind, pp. 47 ff.

111 HUGI, FRANZ JOSEPH. Naturhistorische Alpenreise, vorgelesen der Naturforschenden Gesellschaft in Solothurn. Illustrated with the famous frontispiece, the engraved titlepage, 2 couloured lithographed maps and 16 large lithographed plates. XVI, 2, 378 pp. 8vo. Contemporary boards, the original lithographed printed wrappers are bound in.

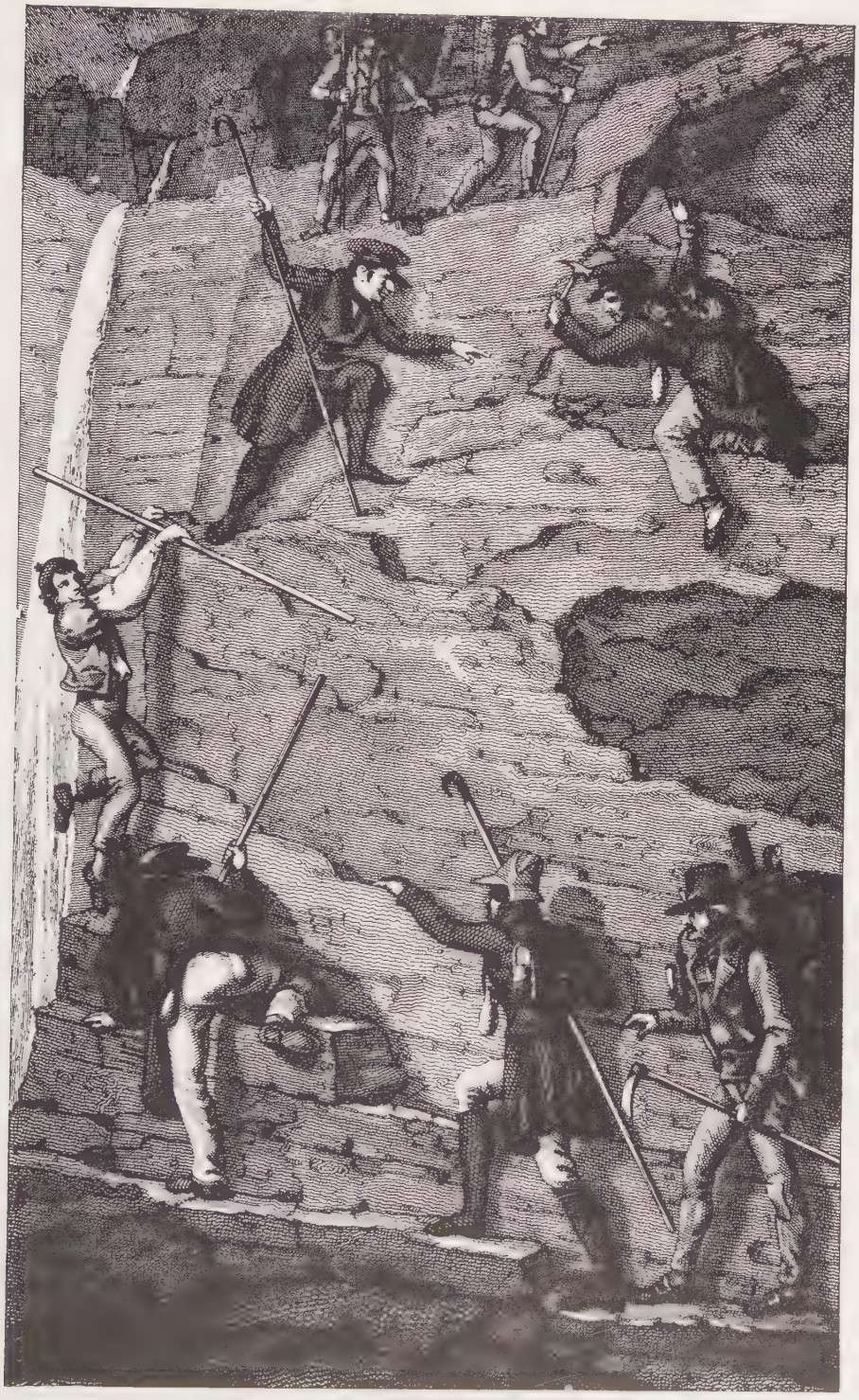
Solothurn, Amiet-Lutiger, 1830. 1400.–

FIRST EDITION OF A CLASSIC OF ALPINE LITERATURE. A very fine copy.
I may be allowed to cite from my catalogue *Bibliotheca Helvetica XVII* (299, item no. 238):

„Der Jungfrau und dem Finsteraarhorn galten die alpinen Bemühungen von Franz Joseph Hugi (1796–1855) vor allem. Als Naturforscher drang er in jene Gletschergebiete des Berner Oberlandes ein, deren erste nähere Durchforschung das Werk der Familie Meyer gewesen war *(siehe Bibliotheca Helvetica V, 259 No. 177)*, und die während 15 Jahren niemand mehr betreten hatte. Hugi war vielleicht der erste Reisende, der (zum Zweck gelogischer Untersuchungen) das Tottal bei Lauterbrunnen gründlich und bis in seinen Hintergrund durchforschte und während dreier aufeinanderfolgender Jahre (1827–1829) voll anerkennenswerter Ausdauer mit wissenschaftlich geschulten Gehilfen und starken Kolonnen von Führern und Trägern versuchte, die Jungfrau von dieser abschreckend erscheinenden Seite aus zu ersteigen, ein Unterfangen, dem angesichts der übrigen, der Durchführung sich entgegenstellenden natürlichen Schwierigkeiten und dem Widerwillen der Führer gegen das Unternehmen ein Erfolg versagt bleiben mußte.

Seine alpinen Bemühungen müssen um so bedeutsamer eingeschätzt werden, als die Veröffentlichung ihres Ergebnisses in seinem Werk „Naturhistorische Alpenreise" die Aufmerksamkeit der für Forschungen dieser Art empfänglichen Kreise wieder auf das Alpengebiet des Berner Oberlandes lenkte. *Hugi war der erste Tourist*, der es gewagt hatte, die Gletscher im Winter zu begehen, ja sogar dort wochenlang unter den schwierigsten Verhältnissen ausharrte.

Der berühmte Frontispiece-Kupferstich stellt eine Kletterei an der Bärenwand im Aufstieg von der Stufensteinalp zum Rottal dar und ist das älteste Kletterbild in der alpinen Literatur."



112 JAHN, CHR. FRIEDRICH AUGUST. Die Metalle und ihre Eigenschaften. Ein unentbehrliches Handbuch für Alle, welche sich mit der Bearbeitung von Gold, Platina, Silber, Eisen und Quecksilber beschäftigen . . . nebst einer Kupfertafel. 3 parts in 1 volume. With an engraved plate. 78 pp.; 84 pp.; 41 (+ 1) pp. 8vo. Contemporary half calf, red spine lettering label.

Leipzig, G. Pönicke, (1810?). 625.–

FIRST EDITION. A well preserved copy though foxed in places. Not listed in Hoover collection, Partington e. a.

THE EARTH

ITS ORIGIN, HISTORY AND PHYSICAL CONSTITUTION

By

HAROLD JEFFREYS, M.A., D.Sc., F.R.S.

One of the Fundamental Works in Geophysics

113 JEFFREYS, HAROLD. The Earth. Its Origin, History and Physical Constitution. Second Edition. IX (+ 3), 348 (+ 2 blank) pp. Large-8vo. Original blue cloth.

Cambridge, University Press, 1929. 265.–

A WELL PRESERVED COPY from the library of Jakob Ackeret, the eminent aerodynamic and mathematician.

Sir Harold Jeffreys (1891–19?) was professor of geophysics and later of astronomy and experimental philosophy at Cambridge University. In 1924 he produced one of the fundamental works in geophysics in the 20th century: „The Earth, etc." In this he argued forcibly against Alfred Wegner's proposed theory of continental drift. Jeffreys demonstrated that the forces proposed by Wegener were inadequate. This did much to inhibit interest and research into drift theory for a while but much new evidence in its favour has since been uncovered.

Johann Gottfried Jugels
freyentdeckte
Experimental-
Chymie,
oder
Versuch
Den Grund natürlicher Geheimnisse durch die
Anatomie und Zerlegungskunst, in dem astralischen, animalischen, vegetabilischen und mineralischen Reiche
durch
systematische Grundsätze, Lehrsätze, Beweise, Gegensätze, Gegenbeweise, Anmerkungen, Vermuthe, Erfahrungen
und darauf folgende Schlüsse,
nebst
dem deutlichen Naturbegriffe
der metallischen Generation,
wie solche täglich in der Erde getrieben wird,
durch
eine lange Untersuchung, also vorzustellen, daß es ein jeder
Naturforschender einsehen und erkennen kann;
In zwey Theile
abgefasset,
und zu jedermanns Nutzen und Vergnügen dem
Drucke überlassen.
Leipzig,
verlegts Johann Paul Krausse, Buchhändler, 1766

114 JUGEL, JOHANN GOTTFRIED. Freyentdeckte Experimental-Chymie, oder Versuch Den Grund natürlicher Geheimnisse durch die Anatomie und Zerlegungskunst, in dem astralischen, animalischen, vegetabilischen und mineralischen Reiche . . . vorzustellen. In zwey Theile abgefasset . . . with engraved frontispiece. 8 leaves, 368 pp. 2 parts in 1 volume. 8vo. Contemporary, probably original, boards, rubbed.

Leipzig, J. P. Krausse, 1766. 1400.–

FIRST EDITION. Well preserved copy; some pencilled notes and underlinings. Tear in half-title to part II carefully mended.

Johann Gottfried Jugel (1707–1786), though not a native Prussian, he was created by the King a „Bergdirector" in 1742. After 1771 he lived in Berlin, and on account of his reputed knowledge of chemistry became a member of the Rosicrucian society. All his life had been devoted to the investigation of nature, and in ‚six and thirty pieces he had recorded his views in the mathematical, Mining, and Occult Sciences'. He died in his 79th year at Berlin in 1786.

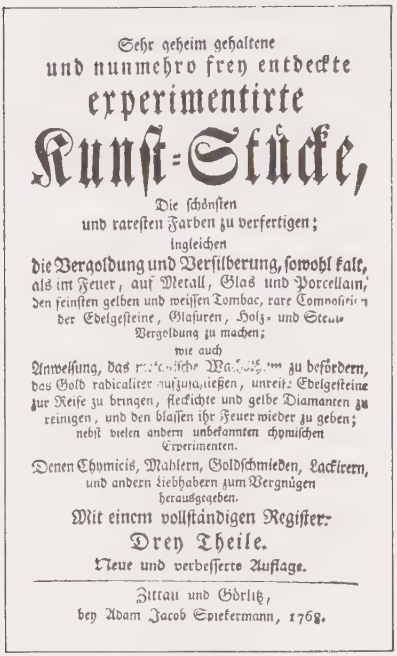
Duveen, p. 313; Ferguson I, 441, 443; Neu 2094; Not in Hoover Coll.

115 JUGEL, JOHANN GOTTFRIED. Sehr geheim gehaltene, und nunmehro frey entdeckte experimentirte Kunst-Stücke, die schönsten und raresten Farben zu verfertigen: ingleichen Gummi-Copal, Glantz-Lacke etc. etc. 2nd revised edition. 6 leaves, 116 pp. 8vo. Original wrappers, spine renewed.

Wassertrüdingen, Fr. Osterchrist, 1754. 850.–

EARLY EDITION, very rare. Contains much valuable information about the production of colours. Good copy.

Not in the Duveen collections; Ferguson I, 441 ff. (not this edition); Not in Neu, Hoover, e. a.



Sehr geheim gehaltene
und nunmehro frey entdeckte
experimentirte
Kunst-Stücke,
Die schönsten
und raresten Farben zu verfertigen;
ingleichen
die Vergoldung und Versilberung, sowohl kalt,
als im Feuer, auf Metall, Glas und Porcellain,
den feinsten gelben und weissen Tombac, rare Composition
der Edelgesteine, Glasuren, Holz- und Stein-
Vergoldung zu machen;
wie auch
Anweisung, das [illegible] zu befördern,
das Gold radicaliter aufzulösen, unreife Edelgesteine
zur Reife zu bringen, fleckichte und gelbe Diamanten zu
reinigen, und den blassen ihr Feuer wieder zu geben;
nebst vielen andern unbekannten chymischen
Experimenten.
Denen Chymicis, Mahlern, Goldschmieden, Lackirern,
und andern Liebhabern zum Vergnügen
herausgegeben.
Mit einem vollständigen Register.
Drey Theile.
Neue und verbesserte Auflage.

Zittau und Görlitz,
bey Adam Jacob Spiekermann, 1768.

Erlanger Programm

116 KLEIN, FELIX. Einleitung in die geometrische Funktionentheorie. Vorlesung gehalten in Leipzig während des Wintersemesters 1880/1. Autographed by Epstein. 4, 280 pp. Small 4to. Contemporary half cloth.

(Göttingen, 1892).

And with:

KLEIN, F. Vergleichende Betrachtungen über neuere geometrische Forschungen. Offprint from the „Mathematische Annalen, 43". 37 pp., 1 blank leaf. 8vo. Orig. printed wrappers.

Leipzig, 1893. – This is a reissue of the 1872 paper

And with:

KLEIN, F. Vorträge über ausgewählte Fragen der Elementargeometrie. Ausgearbeitet von F. Tägert. Eine Festschrift. With 2 plates and 10 text fig. V, 1, 66 pp. 8vo. Contemp. half cloth.

Leipzig, 1895.

Contains also: FRISCHAUF, J. Elemente der absoluten Geometrie. VI, 142 pp. Leipzig, 1876.

And with:

KLEIN, F. Ausgewählte Kapitel der Zahlentheorie I. Vorlesung, gehalten im Wintersemester 1895/6. Ausgearbeitet von A. SOMMERFELD. 6, 354 pp. Small 4to. Contemporary half cloth, spine gone.

Göttingen, 1896. – As no. 1 autographed/lithographed text.

And with:

KLEIN, F. Über die geometrischen Grundlagen der Lorentzgruppe. Vortrag. Offprint from the „Jahresbericht der Deutschen Mathematiker-Vereinigung, 19". 20 pp. Orig. wrappers.

Leipzig, 1910.

And with:

KLEIN, F. Elementarmathematik vom höheren Standpunkte aus. Teil II: Geometrie, gehalten im Sommersemester 1908. 2nd ed. Edited by E: Hellinger. Autolithographed text. VIII, 547 pp. Small 4to. Original printed wrappers.

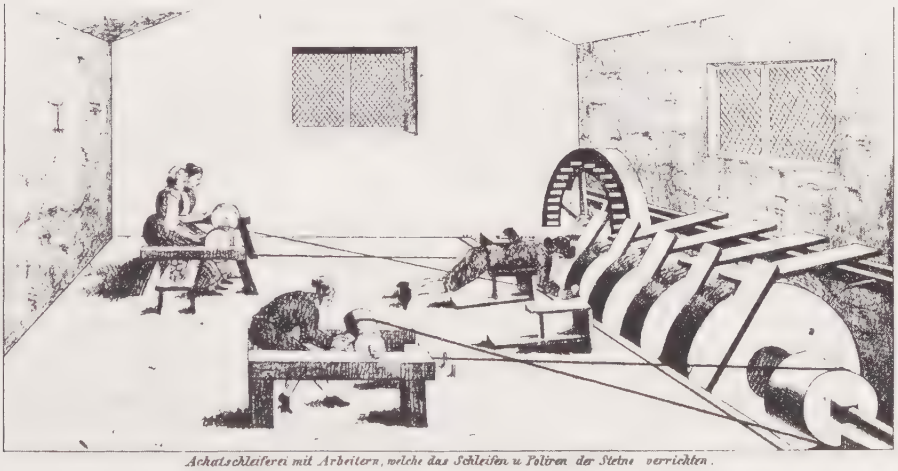
Leipzig, 1914.

And with:

KLEIN, F. Gesammelte mathematische Abhandlungen. 3 volumes. Edited by R. Fricke, A. Ostrowski, H. Vermeil, F. Bessel-Hagen. 8vo. Orig.printed wrappers, defective.

Berlin, 1921–1923. *The collection* 450.–

DSB VII, 396 ff.



Achatschleiferei mit Arbeitern, welche das Schleifen u. Poliren der Steine verrichten.

Technology of Stone Cutting

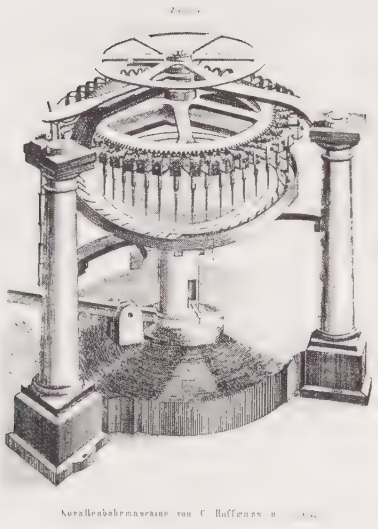
117 KLUGE, KARL EMIL. Handbuch der Edelsteinkunde für Mineralogen, Steinschneider und Juweliere. Nebst 11 Tabellen zur Bestimmung geschnittener Steine und 15 lithographierten Tafeln mit 210 Abbildungen. VIII, 561 (+ 1 blank) pp. Tall-8vo. Contemporary private half cloth.

Leipzig, F. A. Brockhaus, 1860. 875.–

FIRST EDITION of a classical work on precious stones, their properties, technology, etc. He describes precious stones, semi precious stones, perls, corals, their history, place of discovery, their treatment, and their uses.

The author, Karl Emil Kluge (1830–1864), a highly talented natural scientist and mineralogist, was professor in Chemnitz. Also very young he was a corresponding member of several learned societies and author of several treatises on mineralogical and geological matters.

Poggendorff III, 727–8.



– No. 117 –

Advancing the Theory of Integral Equations

118 KNESER, ADOLF. Die Integralgleichungen und ihre Anwendungen in der Physik. VIII, 243 (+ 1 blank) pp. 8vo. Original cloth.

Braunschweig, Vieweg, 1911. 350.–

FIRST EDITION in a well preserved and fresh copy.

One of the most distinguished German mathematicians in the years around 1900, Adolf Kneser (1862–1930) did pioneering work in the application of theoretical physics. Kneser's decisive achievement was to bring the theory of developing arbitrary functions into series with respect to the eigenfunctions of a Sturm-Liouville differential equation to the same level of generality that Dirichlet had achieved in the special case if Fourier series. Kneser's treatment of all this, which found final expression in his book on integral equations, is characterized by a very intensive consideration of the theory's applications to mathematical physics, the theory of heat conduction, for instance.

DSB VII, 407 ff.; Cajori, History of Maths, pp. 327 ff.

Classic in Wave Theory

119 KNOCHENHAUER, KARL WILHELM. Die Undulationstheorie des Lichtes. Eine Beilage zu den Lehrbüchern der Physik. Mit 5 Figurentafeln. 1 unn. leaf, IV, 206 pp. 4to. Contemporary half cloth.

Berlin, G. Eimer, 1839. 650.–

FIRST EDITION in a well preserved copy. – Poggendorff I, 1281–2.

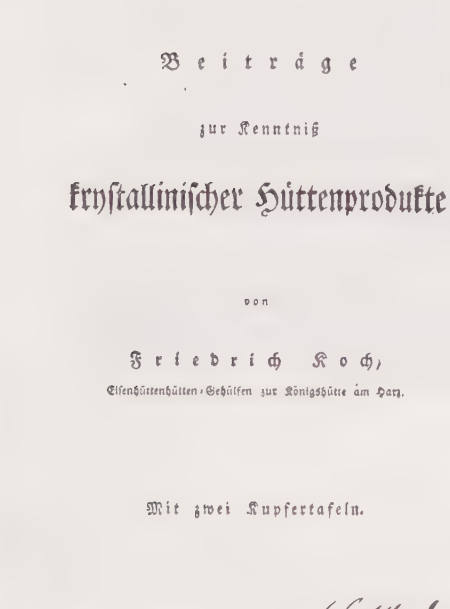
120 KOBELL, FRANZ VON. Über Isomorphie, Dimorphie, Polymerie und Heteromerie. 4 parts in: Bulletin der königl. Akademie d. Wissenschaften, Gelehrte Anzeigen nos. 61, 62, 63, 66. 4to. Original wrappers with printed title-label.

München, Bayer. Akademie der Wissenschaften, 1850. 250.–

FIRST EDITION, uncut copies as issued.

Franz von Kobell (1803–1882), professor of mineralogy, Carl August von Steinheil, professor of math., succeeded in March or April 1839 in fixing the images of the camera obscura on paper coated with chloride of silver. These were the *first photographs taken in Germany*. Steinheil was responsible for the construction of the camera, whilst Kobell attended to the chemical side. (Please see my catalogue 282 no. 147.) Kobell also was quite familiar with the graphic arts, which led him to the idea of electrography, which attracted general attention and was introduced in the reproductive processes shortly after Kobell made his invention public in 1840. Later in life he gave up his work in the graphic arts and resumed his mineralogical research.

Cf. Partington, History of Chemistry III, 204; Eder, History of Photography, pp. 574 ff.



Beiträge

zur Kenntniß

krystallinischer Hüttenprodukte

von

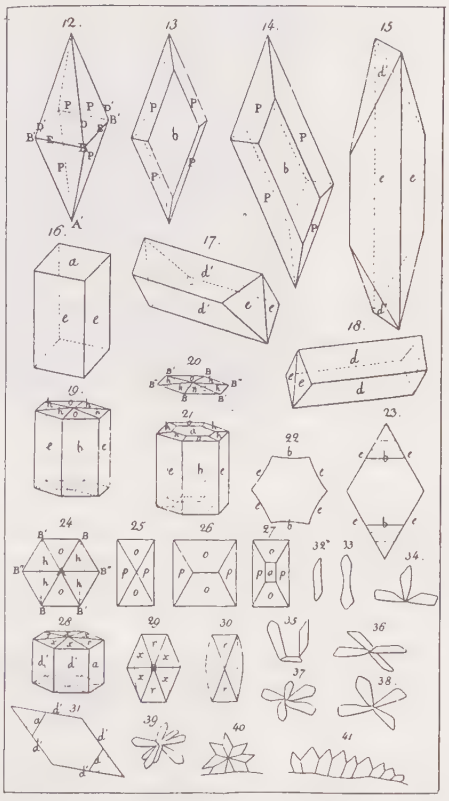
Friedrich Koch,

Eisenhüttenhütten-Gehülfen zur Königshütte am Harz.

Mit zwei Kupfertafeln.

Göttingen, 1822.

In der Dieterichschen Buchhandlung.



121 KOCH, FRIEDRICH. Beiträge zur Kenntnis krystallinischer Hüttenprodukte. Illustrated by 2 engraved folding-out plates, 88 pp, 8vo. Original stiff paper wrappers. Göttingen, Dieterich, 1822. 250.–

FIRST EDITION in a fresh copy.

Friedrich Koch bases his work on research done in collaboration with his teacher the eminent mineralogist and mining engineer Johann Friedrich Hausmann (1782–1859), professor of mineralogy and technology (mining) at Göttingen.

As early as 1803 Hausmann introduced spherical trigonometry for calculation of crystalls. Koch followed in his footsteps.

NDB VIII, 124 ff.

§ 5. Die Einrichtung der Rechenmaschine von Steiger & Egli in Zürich.[1])

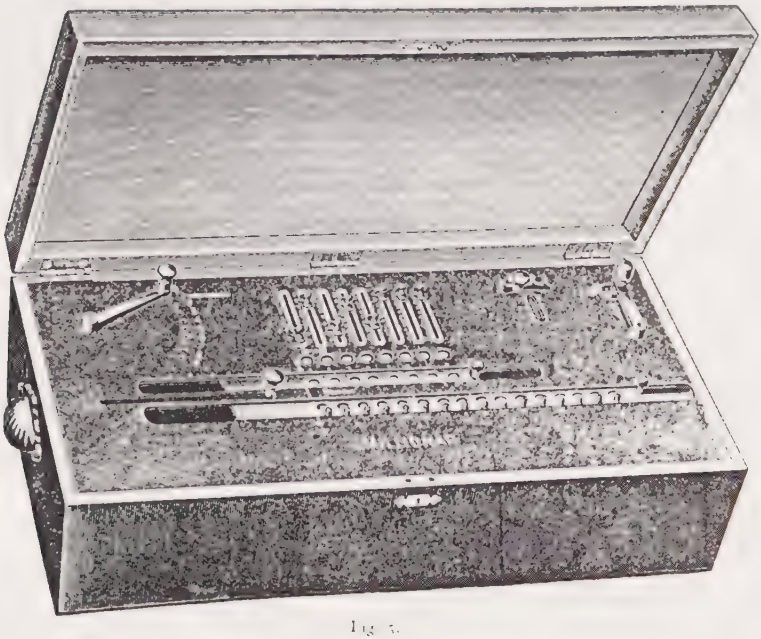


Fig. 2.

§ 3. Die Einrichtung der Rechenmaschine von Burkhardt in Glashütte i. S.

Fig. 3.

Modern Ancestors of Digital Computers

122 KOLL, OTTO. Geodätische Rechnungen mittels der Rechenmaschine. Illustrated by 27 figures in the text. IV, 81 pp. (+ 3 pp. ads.). Tall-8vo. Original green cloth, gilt lettering.

Halle, Strien, 1903. 1100.–

FIRST EDITION. Otto Koll (1851–1911) was professor of geodesy at the agricultural university of Bonn. He had a mere seven students when he commenced his lectures and within a few years practice the number of his audience rocketed to 350. „Koll's besonderes Verdienst besteht darin, dem sich neu formierenden Berufsstand des Vermessungsingenieurs die Basis für eine einheitliche Durchführung geodätischer Grundlagenvermessungen geschaffen und die Leitziele für die Zukunft gesetzt zu haben." (NDB)

Koll was a pioneer in the application of calculating machines in his work. He employed the two most reliable machines of the period: Arth. Burkhardt's / Glashütten in Saxony and Steiger & Egli's/Zürich – machines.

NDB XII, 462 ff.

123 KORFF, SERGE A. Electron and Nuclear Counters. Theory and Use. With illustrations in the text. XII, 212 pp. 8vo. Original cloth.

New York, van Nostrand, 1946. 150.–

FIRST EDITION in a well preserved copy.

It is the purpose of this book to gather and summarize the pertinent facts regarding the theory of the dicharge mechanism and the practical operation of various types of counters. The author first discusses the internal meachnism of the dicharge in the counter. He then presents the constructional and operational features which are desirable, and the best means of securing them. The volume also provides a summary of available apparatus and its shortcomings, a summary of the pre-transistor and computer age of measurement. – A well preserved copy.

Russia's Safe Energy: Coal

124 KOVALEVSKI, S. E. Geognostitcheskoe obosrenije donezkogo gornago krjasha (Geognostical Descriptin of the Donez Mountain Ridges). With a large coloured folding map and 2 folding plans. 86 pp. 8vo. Contemporary full red morocco, richly gilt designs on covers & spine inside dentelles.

St. Petersburg, 1829. 1480.–

FIRST EDITION of one of the first geological descriptions of the famous coal coal district of the donez. Very fine copy, very rare.

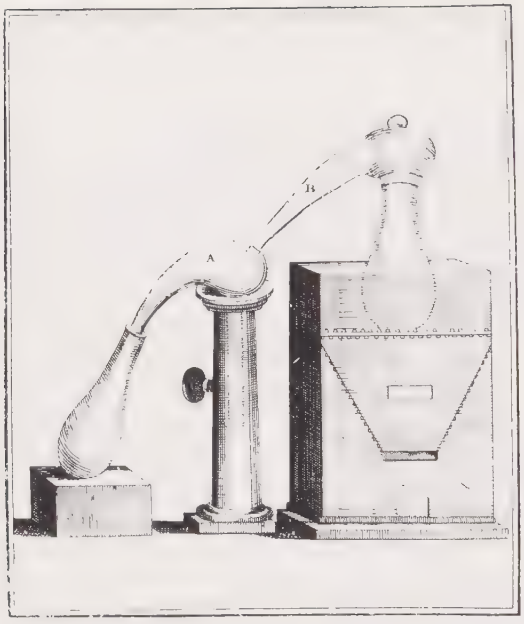
125 KRÜMMEL, OTTO. Versuch einer vergleichenden Morphologie der Meeresräume. Illustrated with 24 folding tables. XII, 110 pp. 8vo. Contemporary half cloth.

Leipzig, Duncker & Humblot, 1879. 350.–

FIRST EDITION and a well preserved copy. This „Attempt of a Comperative Morphology of the Oceans" is a forerunner of Otto Krümmel's (1854–1912) famous „Handbuch der Ozeanographie" (1907–1911) which is still of fundamental importance.

126 KUNKEL VON LÖWENSTERN, JOHANN. Vollständiges Laboratorium chymicum, worinnen von den wahren principiis in der Natur, der Erzeugung, den Eigenschaften und der Scheidung der Vegetabilien, Mineralien und Metalle, wie auch von Verbesserung der Metalle gehandelt wird. 4th revised edition. With an engraved plate. 11 leaves, 671 pp., 8 leaves. Thick 8vo. Modern half calf.

Berlin, Rüdiger, 1767. 2500.–



RARE EDITION of Johann Kunckel's main work. Johann Kunckel of Löwenstern (1630–1703) begun with an apothecary. His father was an assayer, and he had thus very early familiarity with chemical operations, and he was latterly prompted to visit workshops and manufacturies to gain acquaintance with the methods there followed. He studied metals, and though he believd in transmutation, his knowledge and skill and experimental ability made him one of the chief chemists of his time. One of his most famour investigations was upon the production of phosphorus, of which he himself tells the story.

Kunckel's Laboratorium Chymicum is of great use for the history of transmutation, as he records severals cases of such action, more particularly those of Sebald Schwertzer and David Beuther, and they also contain autobiographical details.

Not in Duveen; Ferguson I, 483 ff.; Kopp, Geschichte der Chemie III, 193–201; Not in Neu; Partington II, 361–77.

Beginnings of Solid State Physics
Laue's Dissertation

127 LAUE, MAX VON. Über die Interferenzerscheinungen an planparallelen Platten. Inaugural-Dissertation . . . Öffentlich zu verteidigen am 25. Juli 1903. 58, 2 pp. 8vo. Original wrappers incl. in pagination.

Berlin, 1903. 350.–

FIRST EDITION, FIRST ISSUE of Max von Laue's famous doctoral dissertation in a well preserved copy. It contains also the possible first autobiography Laue's (customary on the last page of the dissertation).

After passing the final secondary-school examinations at Strassburg, the school that crystallized his interest in science and where he received his great knowledge and love for the classical languages, Laue began studying physics at the University of Strassburg, although he was still in military service. In the fall of 1899 he transferred to Göttingen. Under the influence of WOLDEMAR VOIGT (see my catalogue 282, no. 303) he chose to specialize in theoretical physics. At the same time he came to prefer optical problems, a preference that was strengthened by the lectures of Otto Lummer which he

had heard during his three semesters at the University of Berlin. In July 1903 Laue received his doctorate under Max Planck for a dissertation on the THEORY OF INTERFERENCE IN PLANE PARALLEL PLATES. A dissertation which was honored also by finding worthy of a reprint of the nucleus of it in the famous „Annalen der Physik".

DSB VIII, 50; Herneck, Bahnbrecher des Atomzeitalters, 234–40.

128 LAUE, MAX VON. Zur Thermodynamik der Interferenzerscheinungen – Die Entropie von partiell kohärenten Strahlenbündeln. In: Annalen der Physik, series IV, volumes 20 & 23, pp. 365–378 & 1–43. 8vo. Protective cloth case.

Leipzig, 1906–1907. 420.–

FIRST EDITION of two of Laue's important early, papers. With the first of the two he obtained his venia legendi as a young physicist at the university of Berlin where to no lesser than Max Planck had called him in the autumn of 1905.

This call decided the course of von Laue's entire life. Laue became Planck's leading and favorite pupil, and the two formed a lifelong friendship. Laue introduced Planck's central concept, entropy, into optics and qualified as university lecturer with this work on the entropy of interfering pencils of rays.

Herneck, Bahnbrecher des Atomzeitalters, pp. 240 ff. – A. Hermann in: Dict. of Scient. Biogr. VIII, pp. 50 ff.

Author's Presentation Copy

129 LAUE, MAX VON. Die Wärmestrahlung in absorbierenden Körpern. Offprint from „Annalen der Physik IV, 32". 10 pp. 8vo. Original brown printed wrappers.

Leipzig, Barth, 1910. 325.–

FIRST EDITION. Fresh copy with the imprint „Ueberreicht vom Verfasser" and Laue's address-stamp „Dr. M. Laue München Bismarckstrasse 22".

In 1909 Laue became a Privatdozent at the Institute for Theoretical Physics, directed by *Arnold Sommerfeld,* at the University of München. „Er verbrachte in der bayerischen Hauptstadt drei überaus glückliche Jahre. Seine Wohnung – er hatte 1910 die Tochter eines Offizers geheiratet – wurde ein Ort wissenschaftlicher Begegnungen. In den Sommermonaten segelte der Forscher auf dem Starnberger See und arbeitete in seinem Bootshaus in Feldafing, das auf Pfählen im Wasser stand. Dort schrieb er auch sein erstes Buch: über Einstein's Relativitätstheorie. ‚So gut habe ich es nie wieder getroffen', meinte er in seinen Erinnerungen. Die Experimentalphysik vertrat *Röntgen;* Sommerfeld, der bald eine der grössten physikalischen Schulen, die es nach Helmholtz in Deuschland gab, um sich versammelte und Paul von Groth, der namhafte Mineraloge, ein überzeugter Anhänger der Raumgitter-Hypotheses der Kristalle." (Herneck, Bahnbrecher des Atomzeitalters, 241–2).

Fundamental Paper in Micro-Electronics
The Atom Becomes Visible (Ostwald)

130 LAUE, MAX VON – W. FRIEDRICH – P. KNIPPING. Interferenz-Erscheinungen bei Röntgenstrahlen (&) Eine quantitative Prüfung der Theorie für die Interferenz-Erscheinungen bei Röntgenstrahlen. In: „Sitzungsberichte der Königl. Bayer. Akad. der Wissenschaften, math.-phys., Klasse". Illustrated with 5 photgraphic plates; pp. 303–322, pp. 363–374. 8vo. Original dark green printed wrappers.

München, 1912. 2400.–

FIRST EDTION of one of the most important and in its effects far reaching papers in the history of modern science. *It was the first fundamentally new finding about X-rays since Roentgen's great discovery.* By publishing the results of their joint research work, Max von Laue was awarded the 1914 (1920) Nobel Prize in Physics. Einstein called the discovery *one of the most beautiful in physics.*

Laue wrote in his autobiography: „It was plunged into deep thought as I walked home along Leopoldstrasse just after Friedrich showed me this picture (the first of what are today called Laue

diagrams; on a photographic plate). Not far from my own apartement at Bismarckstrasse, just in front of the house at Siegfriedstrasse, the idea for a mathematical explanation of the phenomenon came to me. Not long before I hat written an article for the „Encyklopaedie der mathematischen Wissenschaften" in which I had to re-formulate *Schwerd's Theory of Diffraction by an Optical Grating* (1835; *please see catalogue 282)* so that it would be valid, if iterated, also for a cross-grating. I needed only to write down the same condition a third time, corresponding to the triple periodicity of the space lattice, in order to explain the new discovery..."

The new field of X-ray structure analysis that Laue eestablished developed into an important branch of physics and chemistry. The leading researchers in the field were William Henry and William Lawrence Bragg. Laue himself, a true pupil of Planck's, was interested only in the „great, general principles" and did not concern himself with the study of the structure of individual substances; instead he continued to work on the fundamental theory.

The discovery was the final point in favour of the electromagnetic view of X-rays and the results were twofold. First it offered a method of measuring the wave-length of X-rays by beginning with a crystal of known structure and measuring the amount of diffraction. Second, by using X-rays of known wavelength it was possible to study the atomic structure of crystals, where such structure was unknown. It could even, as it turned out, be used to study polymers, with their giant molecules showing the necessary internal regularities to diffract X-rays. *In 1953 such work reached a climax with Wilkin's X-ray diffraction studies of nucleic acids* – from the data so obtained, Crick and Watson were able to deduce their *Celebrated Watson-Crick Model of DNA* structure and all three shared the 1962 Nobel Prize in medicine and physiology.

Printing and the Mind of Man 406; Olby, Path to the double Helix, pp. 23 ff.; DSB VIII, 51 ff.

Authors' Presentation Copy

131 LAUE, MAX VON & FRANZ TANK. Die Gestalt der Interferenzpunkte bei den Röntgenstrahlinterferenzen. Offprint from „Annalen der Physik, IV, 41". With 1 photographic plate. 10 (last blank) pp. 8vo. Original brown printed wrappers.

Leipzig, Barth, 1913. 750.–

FIRST EDTION in a fine and fresh copy with the imprint „Ueberreicht von den Verfassern".

Laue was appointed associate professor at the University of Zürich in 1912 where he stayed for two years before he accepted a call as full professor to Frankfurt in 1914. In the latter year Laue's father, an official in the military court system, was elevated to the hereditary nobility. Thus within a few years the unkown Privatdozent Max Laue became the worldfamous Nobel Prize winner Max von Laue.

It was in Zürich that Einstein crossed his path again where to he had returned from his post in Prag. Laue spoke on interference of X-rays, an occassion which was followed by Einstein opening the discussion and extemporising „on the most intricate problems of physics with as much ease as if he were talking about the weather. They had met before when Laue, at that time Planck's assistant, „bald nach der Veröffentlichung der Relativitätstheorie (1905; catalogue 282, no. 88) in die Schweiz fuhr, um mit Einstein einige Fragen der neuen Theorie zu erörtern... Gemäss brieflicher Verabredung suchte ich ihn im Amt für geistiges Eigentum auf... der junge Mann, der mir entgegenkam, machte mir einen so unerwarteten Eindruck, dass ich nicht glaubte, er könne der Vater der Relativitätstheorie sein..." (Herneck).

DSB VIII, 51; Clark, Einstein, 116, 137, 158.

Early Bibliography of Electronics

132 LAUE, MAX VON. Die Interferenzerscheinungen an Röntgenstrahlen, hervorgerufen durch das Raumgitter der Kristalle. Illustrated with 7 figures. In: Jahrbuch der Radioaktivität und Elektronik, volume 11, pp. 308–345. 8vo. Original printed wrappers, uncut copy.

Leipzig, 1914. 850.–

FIRST EDITION of this important paper which, together with his „Interference Phenonema in Roentgen-Rays" published in 1912, forms the basis and is the origin of what has become known as SOLID STATE PHYSICS. Max von Laue's discovery that crystals can diffract X-rays opened the path to a new branch of physics: the atomic structure of solids. And it was established by W. H. and

W. L. Bragg (Laue's paper here is followed by one of W. L. Bragg, Die Reflexion der Röntgenstrahlen, i. e. Reflexion of X-rays, pp. 346–391; translated by M. Iklé) that a set of crystal planes reflects a parallel beam of monochromatic x-radiation at a glancing angele, called the Bragg angle.

One of the first consequences of Laue's discovery was a new classification of solids. Where as the term „crystal" had previously been reserved for solids of symmetric appearance, we know today that even apparently amorphous solids may be conglomerations of small crystals, and we therefore distinguish crystalline from non-crystalline substances by their atomic structure only.

Also included in this issue is on pp. 394–418 a valuable bibliography on electronics (Die Literatur der Elektronik).

Cajori, History of Physics, p. 334; Bleich, Story of X-Rays, pp. 136 ff.; Dibner, The New Rays of Professor Röntgen, pp. 49 ff.; Taton, Sciene in the Twentieth Century, pp. 107 ff.; Printing and the Mind of Man, no. 406.

Secret Wartime Work

133 LAUE, MAX VON. Ueber die Wirkungsweise der Verstärkerröhren. Illustrated. Offprint from the „Annalen der Physik IV, 59". 28 pp. 8vo.

Leipzig, Barth, 1919. 200.–

FIRST EDITION. The offprints issued during the austerity following the end of the first WW were issued without wrappers because of the lack of paper. Instead they bear the imprint „Sonderdruck aus..." directly above the title of the paper.

During the war Laue worked with Willy Wien in Würzburg on developing electronic amplifying tubes for improving the army's communication techniques. A fruit of this work is the present paper published after the end of the war.

In 1919 he arranged an exchange of teaching posts with Max Born: Born left Berlin to go to Frankfurt and Laue went to the University of Berlin, which he considered his true intellectual home. Here he was again able to be near Planck, his honoured teacher and friend.

The Nobel Prize 1914

134 LAUE, MAX VON. Ueber die Auffindung der Rötngenstrahlinterferenzen. Nobelvortrag gehalten am 3. Juni 1920 in Stockholm. 16 pp. 8vo. Original printed wrappers.

Karlsruhe, 1920. 250.–

FIRST EDITION in a fine and fresh copy. The awarding of the Nobel Prize in physics for 1914 to Laue indicated the significance of the discovery that Albert Einstein once called one of the most beautiful in physics. Subsequently it was possible to investigate X-radiation itself by means of wavelength determinations as well as to study the structure of the irradiated material.

The Prize was awarded, war broke out and Laue was not able to come and receive the award delivering the customary lecture. This was made up for in 1920.

135 LAUE, MAX VON. Bewegung von Elektronen und Ionen im Kraftfelde. Offprint from the „Handbuch der Radiologie, VI". 98 pp. Large 8vo. Original grey printed wrappers.

Leipzig, 1924.

AND WITH:

LAUE, MAX VON. Korpuscular- und Wellentheorie. Offprint from the „Handbuch der Radiologie VI/1, 2. Auflage". 114 pp. Large 8vo. Original cream printed wrappers.

Leipzig, 1933. 325.–

FIRST EDITIONS of Laue's important contributions to the Handbook of Radiology.

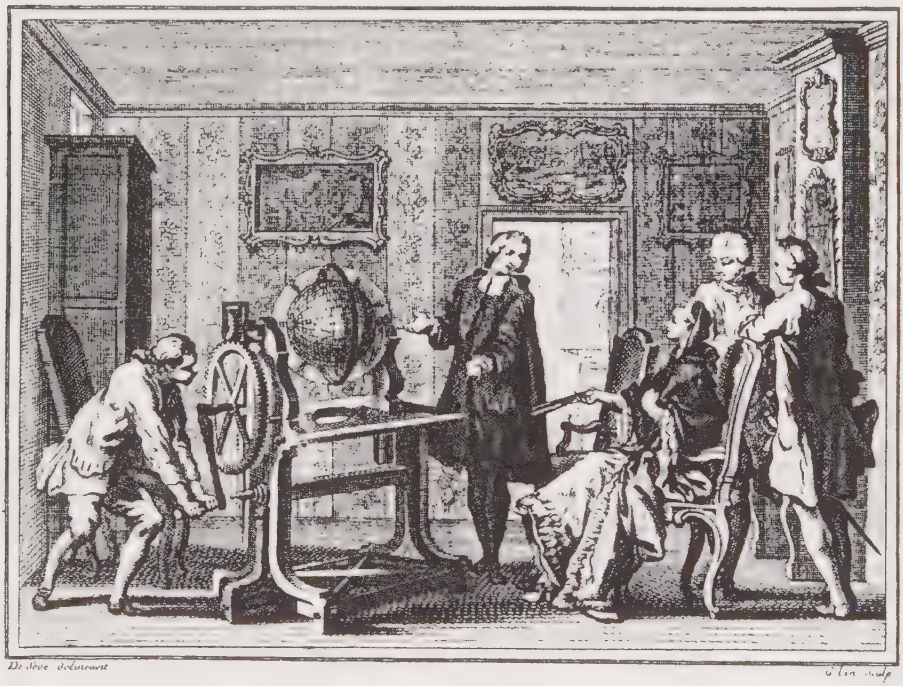
Laue expaned his original geometric theory of X-ray interference into the so-called dynamical theory. Where as the geometric theory dealt with only the interaction between the atoms of the crystal and the incident electromagnetic waves, the dynamical theory took into account the forces between the atoms as well. To be sure, the correction amounted to only a few seconds of arc, but deviations had appeared early in the course of the very precise X-ray spectroscopic measurements. After the discovery of electron interference, Laue included this phenomenon in his theory. He did not, however, otherwise participate in the creation or development of quantum theory; and, like Planck, Einstein, de Broglie, and Schrödinger, he was skeptical of the „Copenhagen Interpretation".

DSB VIII, 51–2.

136 LAUE, MAX VON. Theorie der Supraleitung. With 31 illustrations. 4, 124 pp. 8vo. Original printed wrappers.

Berlin & Göttingen, 1947. 185.–

FIRST EDITION in which Max von Laue endeavours to clarify oppinion on superconductivity. Which in recent years became of increasing importance in electronics industry. A good copy.



A PARIS

M . DCC . LX VII

137 (LE BRUN, CHARLES-FRANÇOIS). Expérience physique servant à expliquer les causes du déluge. Illustrated by a charming engraved plate (De Séve del.; Gobin sc.). 3 (+ 1 blank) pp. 4 to.

Paris, Michel Lambert, 1767. 220.–

ILLUSTRATED PROSPECTUS. The finely executed engraving depicts the Abbé Lebrun, tudor of the queen's pages, demonstrating „on pourra voir la machine, dont il s'agit, chez le Sr. Tremel, méchanicien de Monseigneur le Dauphin, au vieux Louvre, audessus de l'Académie d'Architecture."

Small piece cut off centrefold (possibly to eliminate previous owner's name); otherwise a well preserved copy of this very rare publication of which only few copies were handed down to us.

Finely Bound Set

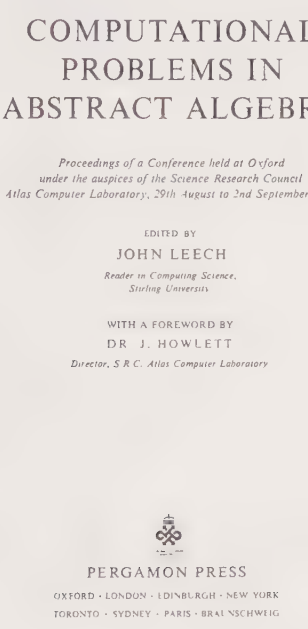
138 LECOQ, HENRY. Élémens de géologie et d'hydrographie, ou résumé des notions acquises sur les grandes lois de la nature; faisant suite et servant de complément aux élemens de géographie physique et de météorologie. 2 volumes. Illustrated by 8 engraved plates. XV (+ 1), 316 pp.; 4, 575 (+ 1 blank) pp. Tall-8vo. Contemporary full mottles calf, red and green spine labels, richly gilt decorated spines.

Paris, J.-B. Baillière, 1838. 680.–

FIRST EDITON in a fresh set, very nicely bound and the binding almost as new!

Henry Lexoq (1802–1871) by training and profession an apothecary in Clermont-Ferrand, he was professor of natural history and director of the faculty of sciences at the local college. He published a number of books on physical geography, meteorology, glaciology and botany.

Poggendorf I, 1402 & III, 788.


COMPUTATIONAL
PROBLEMS IN
ABSTRACT ALGEBRA

Proceedings of a Conference held at Oxford
under the auspices of the Science Research Council
Atlas Computer Laboratory, 29th August to 2nd September 1967

EDITED BY
JOHN LEECH
Reader in Computing Science,
Stirling University

WITH A FOREWORD BY
DR J. HOWLETT
Director, S.R.C. Atlas Computer Laboratory

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139 LEECH, JOHN (ED.) Computational Problems in Abstract Algebra. Proceedings of a Conference held at Oxford under the auspices of the Science Research Council, Atlas Computer Laboratory, 29th August to 2nd September 1967. X, 402 pp. Tall-8vo. Original cloth.

Oxford, 1970. 125.–

FIRST & ONLY EDITION of this important congress report. A fine, fresh copy.

139a LEHMANN, OTTO. Die Gestaltungskraft fliessender Kristalle. In: Verhandlungen der Gesellschaft Deutscher Naturforscher und Aerzte, 78. Versammlung zu Stuttgart, zweiter Teil, 1. Hälfte, pp. 44–49. Tall-8vo. Original blue printed wrappers.

Leipzig, Vogel, 1907. 850.–

FIRST EDITION OF AN EPOCHAL PAPER: A well preserved and fresh copy. A remarkable volume which contains besides Otto Lehmann's famous paper another pioneering announcement and that is Baur's "Ueber Hagel- und Wetterschiessen" (pp. 167 ff.) which is the very first account on the avertion of hailstorms or more generally, the influence of weather by rockets. Baur had developed a rocket which was easy to handle and could reach a height of 3000 feet or more carrying a powerful explosive charge. Another line of rocket development was introduced at the same meeting by A. Bujard from Stuttgart in a paper entitled „Rockets in the Service of Photography". It dealt mostly with the work of the engineer Alfred Maul who wanted tu use camera-carrying rockets for military reconnaissance.

However, let us return to the main subject: liquid crystals which were if not discovered only by Otto Lehmann (1855–1922) from Konstanz, brought to the attention of scientific workers by this genius. When in 1888 the Austrian botanist Friedrich Reinitzer noticed that the solid compound colesteryl benzoate seemed to have two distinct melting points, Lehmann immediately began research on this and other organic substances displaying the same property. At that time he succeeded Heinrich Hertz as professor of physics at the Technische Hochschule at Karlsruhe. „Wenige Jahre später hat sich Ernst Haeckel Lehmanns Hypothesen und Ergebnisse ganz zu eigen gemacht und sie praktisch als Beweis für den Uebergang vom anorganischen zum organischen Leben betrachtet; die Abbildungen in seinem letzten, „Kristallseelen" betitelten Werk hat er von Lehmann übernommen..."

„Die technische Nutzanwendung flüssiger Kristalle wird freilich erst in den letzten Jahren, etwa seit 1970, erkennbar. Aus den scheinbaren Lebewesen Lehmann's sind die bekannten Displays, die LCDs entstanden, die wir bald auch in unseren Auto-Armaturen haben werden. Abgesehen davon stellen wir aber fest, dass flüssigkristalline Texturen einen wesentlichen Anteil beim Aufbau der lebenden Zelle haben, besonders im Nervengewebe, wo sie in den Schwann-Zellen als sogenannte Myelinscheide vorhanden sind. „(Kelker, Flüssige Kristalle... in: Naturwissenschaftliche Rundschau 39, No. 6).

DSB VIII, 148 ff.

– SEE ALSO UNDER HAECKEL –

Die Lehre

von den

flüssigen Krystallen

und ihre Beziehung zu den Problemen der Biologie.

Von

O. Lehmann.

Prof. der Physik an der Technischen Hochschule Karlsruhe.

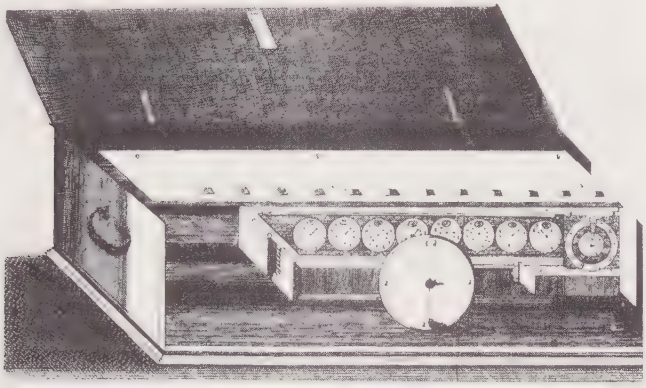
The „Als-Ob" of Molecular Physics

139b LEHMANN, OTTO. Die Lehre von den flüssigen Krystallen und ihre Beziehung zu den Problemen der Biologie. With 572 illustrations in the text. 2, 255 (+ 1) pp. Large 8vo. Contemporary blue cloth.

Wiesbaden, Bergmann, 1918. 1100.–

FIRST EDITION; the special offprint from „Ergebnisse der Physiologie von Asher und Spiro, XVI". A well preserved copy.

DSB VIII, 148 ff.



Ancestor of Modern Computer
Leibniz's Invention in Use until Electronic Revolution in 1970's

140 LEIBNIZ, GOTTFRIED WILHELM VON. Theodicee, das ist, Versuch von der Güte Gottes, Freyheit des Menschen, und vom Ursprunge des Bösen, bey dieser vierten Ausgabe durchgehend verbessert auch mit verchiedenen Zusätzen und Anmerkungen vermehrt von Johann Christoph Gottscheden. Illustrated by the fine engraved Leibniz-Portrait and the large folding-out engraved plate of the calculator. 12 unn. leaves, 843 pp., 26 unn. leaves. thick-8vo. Contemporary – and very likely the original – publisher's boards.

Hannover & Leipzig, Nicol. Försters und Sohns Erben, 1744. 3600.–

IMPORTANT GOTTSCHED EDITION in a well preserved and fresh copy without the otherwise quite common browning of the paper.

Pascal's calculator of 1642 was essentially an adding machine. Gottfried Wilhelm von Leibniz actually produced a mechanical multiplier. His method was elegant and generally foolproof. He sent a copy of his first machine to Peter the Great with the request that Peter send it to the emperor of China. He hoped it would encourage the emperor to increase trade with Europe. Those where the days!

Leibniz's machine was custom-made and rare until the early part of the 19th century, when Charles Thomas of Alsace went into the business of manufacturing them for merchants. Thomas produced approximately 1, 500 units in a 60-year span. His machines used the Leibniz stepped wheel, but the figures were set using numbers in slots. Another variant was patented in 1875 by F. J. Baldwin, and machines using that patent were manufactured by W. T. Odhner. They became the most popular business calculators for many decades. The system of stepped wheels can be found in many mechanical calculators manufactured until the electronic revolution of the 1970s.

Gottfried Wilhelm von Leibniz (1646–1716) was one of the last „universal men" of the type which the Italian Renaissance had ideally postulated: philosopher, historian, mathematician, scientist, lawyer, librarian, and diplomat. In all these field either his actual achievements or his seminal suggestions have become part and parcel of European thought.

Although trained for the law, mathematics was his favourite subject. Mathematical conception determine his philosophy. In it, Leibniz tried to combine physics and metaphysics and to reconcile philosophy and theology. Like his discovery of the binary system, the invention of a device now known as the LEIBNIZ WHEEL is based on his philosophy. This mechanism enabled him to build a machine which surpassed Pascal's in that it could do not only addition and subtraction fully automatically but also multiplication and division. It was Leibniz who summed up the situation very well indeed when he wrote:

> „Also the astronomers surely will not have to continue to exercise the patience which is required for computation. It is that deters them from computing or correcting tables, from the construction of Ephemerides, from working on hypothesis, and from discussions of observations with each other. For it is unworthy of excellent men to lose hours like slaves in the labor of calculation which could safely be relegated to anyone else if machines were used."

This notion which already had received such explicit formulation 300 years ago is fully in keeping with the genius of Leibniz that even the field of computing was so very much in its infancy he already understood the point of the matter with such astonishing clarity (IBM couldn't have said it better in the days of the PCs). It is also of interest to realize that he had a copy of his machine built for Peter the Great to send to the emperor of China to show the orientals the arts and industry of the occidentals and thereby increase commerc between the East and West! Tempi passati...

His little machine is still preserved in the Niedersächsische Landesbibliothek and his work stimulated a number of others to build improved machines, many of them ingenious variants of his. Today these machines are still with us and play a significant role for minor calculations although they are more and more replaced by the electronic pocket calculator. The last time they have been of decisive importance was during World War II when the ENIGMA and other codeing and de-codeing machines helped to win the war.

Ravier 349; Printing and the Mind of Man 177; Korte, Zur Geschichte des maschinellen Rechnens, pp. 25 ff.; Vorndran, Entwicklungsgeschichte des Computers, pp. 40 ff.

141 LEIBNIZ, GOTTFRIED WILHELM VON. 1. De vera proportione circuli ad quadratum circumscriptum in numeris rationalibus. – 2. Unicum opticae, catoptricae et dioptricae principium. – 3. Meditatio de separatione salis et aquae dulcis, novaque separationum chymicharum genere. – 3 papers in: Acta Eruditorum Lipsiensa, volume I, pp. 41–46; 185–190; 386–388. With 2 full page engraved plates. 4to. Contemporary vellum.

Leipzig, Gross & Gleditsch, 1682. 1400.–

FIRST EDITION OF THE FIRST VOLUME OF THE FIRST SCIENTIFIC GERMAN PERIODICAL. A well preserved copy of a very rare volume which, besides the three Leibniz papers hosts a large number of papers on various subjects, including engraved plates. The Acta Eruditorum was founded in Berlin in 1682 in collaboration with Leibniz and his two friends Otto Mencke and Christian Pfautz. It was to become the platform for some of Leibniz most famous mathematical ideas which appeared here for the first time.

The present two papers on the „Proportione Circuli ad Qaudratum" and the „Unicum Opticae, Catoptricae et Dioptricae Principium" are concise summaries of the chief results of the arithmetical quadrature of the circle and a hint regarding the derivation of the law of refreaction by means of the extreme value method of the differential calculus.

Ravier, Bibliographie des Oeuvres de Leibniz, Nos. 84, 85, 86; Dict. of Scientific Biography VIII, pp. 163 ff.

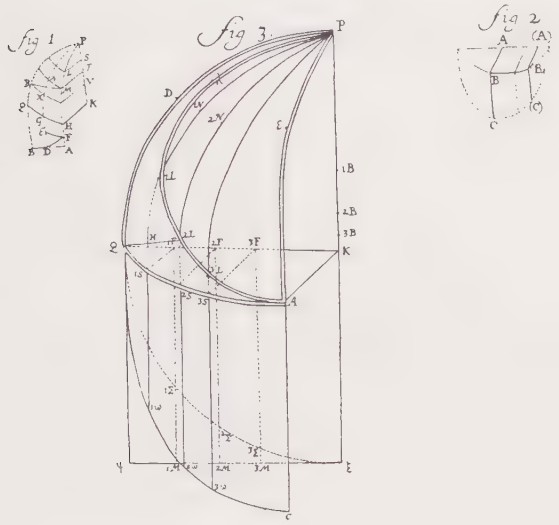
142 LEIBNIZ, GOTTFRIED WILHELM VON. Concstructio testudines quadrabilis hemisphaericae. With 1 engraved plate. In: ACTA ERUDITORUM, June 1692, pp. 275–279. 4to. Contemporary vellum.

Leipzig, Gross & Gleditsch, 1692. 480.–

FIRST EDITION. A well preserved copy of the complete volume of the A. E. with numerous other important papers by Boyle, Carr, Grew, Ramazzini, Jac, Bernoulli, e. a., and one by

HALLEY, EDMOND. Emendationes et notae in tria loca vitiose edita in textu vulgato naturalis historiae C. Plinii. 6 pp.

TAB. V. ad A. 1692. pag. 276.



AD I: „Ce même problème (celui de Viviani) m'a esté envoyé par ordre du Grand Prince de Toscane, et j'en ai donné aussi une solution, mais à la haste, le propre jour de la reception, a fin de depecher la reponse par la première poste; cette solution est imprimée dans les actes de Leipzig. La festination a fait que dans l'addition qui se trouve à la fin de la solution s'est glissée une erreur que Mr. Bernoulli a remarqué, et que c'est sur l'avertissement de M. Bernoulli. Leibniz éconçait ce problème en ces termes, dans une lettre à Thevenot": „... trouver un temple hémisphérique ou espèce de rotonde, dont les 4 fenètres également disposée soient tracées en sorte que lorsqu'on ôte les fenêtres, le reste de cette surface hémisphérique soit parfaitement quadrable."

Ravier No. 118.

Important Series of Papers
Application of Differential Calculus

143 LEIBNIZ, GOTTFRIED WILHELM VON. Nova Calculi Differentialis Applicatio & Usus, ad multiplicem linearum constructionem, ex data tangentium conditione. With an engraved plate. In: ACTA ERUDITORUM, pp. 311–316. 4to. Contemporary vellum.

Leipzig, Gross & Fritsch, 1694.

AND WITH:

LEIBNIZ, GOTTFRIED WILHELM VON. Constructio propria problematis de curva isochrona paracentrica. (&) Excerpta ex epistola C. H. Z. ad G. G. L. Same journal, pp. 339–341.

AND WITH:

BERNOULLI, JACOB. Curvature laminae elasticae. Ejus identitas cum curvatura lintei a pondere inclusi fluidi expausi, etc. Same journal, pp. 262–276 and with a large engraved folding-out plate.

AND WITH:

BERNOULLI, JAKOB. Solutio problematis Leibnitiani de curva accessus & recessus aequabilis a puncto dato, mediante rectificatione curvae elasticae. Same journal, pp. 276–280.

AND WITH:

BERNOULLI, JOHANN. Constructio facilis curvae accessus aequabilis a puncto dato per rectificationem curvae algebraicae. With an engraved plate. Same journal, pp. 394–399.

Leipzig, 1694. 1200.–

FIRST EDITION of all papers: the complete volume as issued and which contains many more papers on a variety of subjects.

When in 1686 Leibniz published the main concepts of the proof of the integral calculus, he showed that by the use of his notation, the properties of curves could be fully expressed by equations.
Yet Leibniz did not attract general attention until his public attack on Cartesian dynamics by reference to the principle of the conservation of vis viva, with the dimensions mv^2. In the subsequent controversy with the Cartesians, Leibniz put forth for solution a dynamic problem that was also considered by Huygens and Jakob Bernoulli: Under what conditions does a point moving without friction in a parallel gravitational field descend with uniform velocity? In this connection, Bernoulli raised the problem of the catenary, which was solved almost simultaneously by Leibniz, Huygens and Joh. Bernoulli and which introduced for debate a series of further subjects of increasing difficulty, stemming primarily from applied dynamics. Two are particulary noteworthy: the first was the determination, requested by Leibniz in 1689, of the isochrona paracentrica. Under what conditions does a point moving without friction under constant gravity revolve with uniform velocity about a fixed point? This problem was solved by Leibniz, Jakob & Johann Bernoulli in 1694 and the solution presented in the present series of papers. The second problem took some more years to be solved (1697).

Ravier Nos. 134, 137, 138; DSB VIII, 163.

144 LEIBNIZ, GOTTFRIED WILHELM VON. Notatiuncula ad acta decembris 1695. In: ACTA ERUDITORUM, pp. 145–147. 4to. Contemporary vellum.

Leipzig, Gross & Fritsch, 1696. 650.–

FIRST EDITION. A well preserved copy of the complete volume with an abundance of other contributions by the Bernoullis, Ner. Grew, Ridley, Tschirnhaus e. a. „Se rapportait à un article de Jacques Bernoulli „Explicationes, annotationes et additiones ad ea, quae in actis super. anni de curva elastra, isochrona, paracentrica controversa leguntur, uni de linea mediarum directionum aliisque novis. Jacques Bernoulli s'y palignait de la partialité de Leibniz qui remettait les choses au point. Il répliqua en juillet 1696" (Ravier):

BERNOULLI, JAKOB. Problema Beaunianum universalis conceptum, sive solutio aequationis nupero... cum aliis quibundam annotatis. In: Same journal, pp. 332–337 with an engraved plate.

Ravier 146; DSB VIII, 162 ff.; on Beaune, Florimond (1601–1652) DSB III, 614 ff.

Basic Ideas of Leibniz Philosophy

145 LEIBNIZ, GOTTFRIED WILHELM VON. De ipsa natura, sive de vi insita, actionibusque creaturarum; pro dynamicis suis confirmandis illustrandisque. In: ACTA ERUDIT. pp. 427–440. 4to. Contemporary vellum.

Leipzig, Gross & Fritsch, 1698. 1100.–

AND WITH:

(BERNOULLI, JOHANN). Ejusdem annotata on solutiones fraternas problematum quorundam suorum, editas proximo actorum majo. Same journal, pp. 466–474.

FIRST EDITIONS. A well preserved complete volume of the famous journal containing many more important papers.

A controversy between Johann C. Sturm, professor of mathematics in Altdorf, and the physician Günther C. Schelhammer in Kiel (whose paper „Natura sibi et medicis vindicata" is printed here on pages 63 ff.) provided for Leibniz an opportunity to expound the basic ideas of his philosophy in the course of a critical review of the dispute. This was published here under the title „Concerning Nature

Itself". Sturm accepted the position of Robert Boyle, who proposed that the term „nature" should be replaced by „mechanism", while Schelhammer defended the concept of nature as something more than material.

In his review Leibniz not only answered Sturm, who had corresponded with him following the publication of the „Système Nouveau" in 1695, but directed his criticism more generally against the Occasionalists and others who would deny the reality of the physical world. The doctrine of occasionalism, he thought, had dangerous consequences which its defenders did not intend; namely, the implication of pantheism; for, since that which does not act can in no way be a substance, the doctrine implies created things to be mere modifications of the one divine substance and so, like Spinoza, makes out of God the nature of the world itself.

Ravier 154; Aiton, Leibniz, pp. 235.

STURM – please see also item no. 241

Sowing the Seeds in the Leibniz – Newton Controversy

146 LEIBNIZ, GOTTFRIED WILHELM VON. – 1. Fatio de Duillier, Nicolas: Lineae brevissimi descensus investigatio geometrica duplex cui addita est investigatio geometrica solidi rotundi, in quo minima fiat resistentia. – 2. Leibniz, Gottfried Wilhelm von: Responsio ad Dn. Nic. Fatii Duillerii imputationes. Accessit nova artis analyticae promotio specimine indicata dum designatione per numeros assumtitios loco literarum, Algebra ex combinatoria arte lucem capit.

2 important papers in ACTA ERUDITORUM 1699 & 1700; pp. 510–513 & 198–208. 4 to. Contemporary vellum.

Leipzig, Gross & Fritsch, 1699–1700. 1500.–

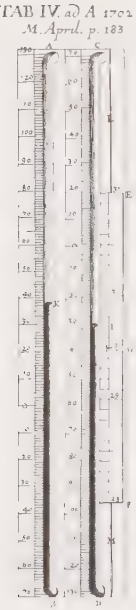
FIRST EDITIONS. Well preserved copies of these two important volumes which are present here in the complete issue including a host of papers besides the two above mentioned (also by Bernoulli, Tschirnhaus and many others)

Leibniz stands at the very beginning of formal logic, for he succeeded in casting together the older syllogistics into the form of logical calculus, which he intended to lend the same certainty to deductions concerning concepts as that possessed by algebraic deduction. For fifteen years Leibniz had enjoyed unchallenged the honor of being the inventor of his calculus (1684). But in 1699 Fatio de Duillier (1664–1753), a Swiss, who had settled in England, sowed the seeds of the notorious priority dispute, stated in the 1699 - paper his conviction that Isaac Newton was the first inventor of the calculus. This was the first distinct insinuation of plagiarism. Fatio de Duillier's insinuations lightened up a flame of discord which a whole century was hardly sufficient to extinguish. Leibniz, who had never contested the priority of Newton's discovery, and who appeared to be quite satisfied with Newton's admission of his scholium, now appears for the first time in the controversy.

Leibniz replied in 1700 with a vigorous defence of his position, in which he stressed that he had obtained only results, not methods, from Newton and that he had already published the fundamental concepts of the differential calculus in 1684, three years before the appearance of the material that Newton referred to in a similar form in his „Principa (1687)". On this occassion he also described his own procedure with reference to de Moivre's theorem (1698) on series inversion through the use of undetermined coefficients. Leibniz made his procedure more general and easier to grasp by the introduction of numerical coefficients. The attack subsided because Fatio, who was excitable, oversensitive, and given to a coarse manner of expression, turned away from science and became a fervent adherent of an aggressive religious sect. He was eventually pilloried (do we see here a parallel to the antianti movements of the whining generation with their gartenzwerg-mentallity of the 1980s?)

Still, the controversy raged on and the Royale Society had to establish a commission eventually which in 1712 decided against Leibniz based on circumstantial evidence and superficial examination of available data. Leibniz was not even heard before the commission. The verdict was accepted without question for 140 years and was influential into the first half of the 20th century. In the light of the much more extensive material now available, it is recognized as wrong. It can be understood only in the nationalistic context in which the controversy took place.

Ravier Nos. 233 & 156; DSB VIII, 164 ff.; Cajori, History of Mathematics, pp. 213 ff.



Halley's Marine Barometer

147 LEIBNIZ, GOTTFRIED WILHELM VON. Specimen novum analyseos pro scientia infiniti, circa summas & quadraturas. With a large folding-out table. In: Acta ERUDIT., pp. 210–219. 4to. Contemporary vellum.

Leipzig, Gross, Fritsch & Groschuf, 1702. 480.–

AND WITH:

HALLEY, EDMOND. Relatio de barometro marino, a D. Roberto Hook invento, cum descriptione ejus & usu, jussu regiae societatis ab Edmondo Halley publicata. Same journal, pp. 180–188 with a nice engraved plate.

AD I: FIRST EDITION in a well preserved copy of the complete volume of the ACTA ERUDITORUM.

Ravier 163.

AD II: Edmond Halley, whose comet attracted so much attention in recent months, describes in this paper Robert Hooke's famous instrument which he had used on his voyage as commander of a naval vessel commissioned to „improving the knowledge of the longitude" sailing from England in 1698 and returning after a successful cruise before the costs of Brazil and the West Indies in 1699.

McPike, Hevelius, Flamsteed and Halles, 1937, pp. 57 ff.; Middleton, Meteorological Instruments, pp. 37 ff.

148 LEIBNIZ, GOTTFRIED WILHELM. Continuatio analyseos quadraturarum rationalium edi coeptae in his actis. In: ACTA ERUDITORUM, pp. 19–26. 4to. Contemporary vellum.

Leipzig, Gross, Fritsch & Groschuff, 1703. 450.–

FIRST & ORIGINAL EDITION. – Ravier 164.

149 LEIBNIZ, GOTTFRIED WILHELM VON. De Lineae Super Linea Incessu, ejusque tribus speciebus, motu radente, motu provolutionis, & composito ex ambobus. With an engraved plate. In: ACTA ERUDITORUM, pp. 10–15. 4to. Contemporary vellum.

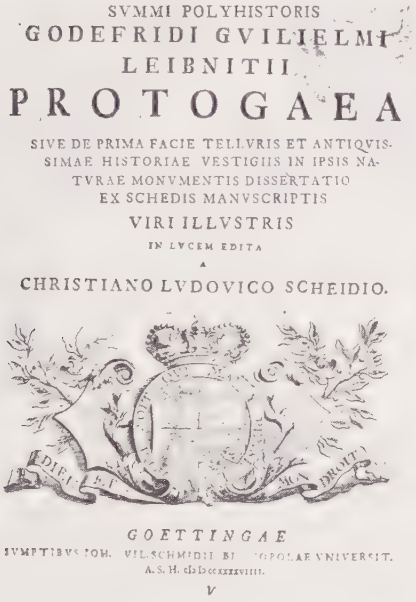
Leipzig, Gross, Gleditsch, & Groschuf, 1706. 450.–

AND WITH:

LEIBNIZ, GOTTFRIED WILHELM VON. Excerptum ex Epistola G. G. L. quam pro sua Hypothesi physica motus planetarii olim (Febr. 1689) his Actis inserta, ad amicum scripsit. In the same journal, pp. 446–451.

FIRST EDITIONS of both papers. A well preserved copy of the complete volume with its abundance of other scientific papers and engraved plates.

Ravier 169 & 170/71.


SVMMI POLYHISTORIS
GODEFRIDI GVILIELMI
LEIBNITII
PROTOGAEA
SIVE DE PRIMA FACIE TELLVRIS ET ANTIQVISSIMAE HISTORIAE VESTIGIIS IN IPSIS NATVRAE MONVMENTIS DISSERTATIO
EX SCHEDIS MANVSCRIPTIS
VIRI ILLVSTRIS
IN LVCEM EDITA
A
CHRISTIANO LVDOVICO SCHEIDIO.
GOETTINGAE
V

Leibniz' Unicorn – Metals & Minerals of the Harz Mountains

150 LEIBNIZ, GOTTFRIED WILHELM. Protogaea sive de prima facie telluris et antiquissimae historiae vestigiis in ipsis naturae monumentis dissertatio ex schedis manuscriptis ... in lucem edita a Christian Ludovico Scheidio. Titlepage printed in red and black with engraved Royal Hannover (English!) arms and 12 large engraved plates. 1 unn. leaf, XXVI pp., 1 unn. leaf, 86 pp. 4to. Modern vellum.

Göttingen, J. W. Schmid, 1749. 2200.–

FIRST EDITION.

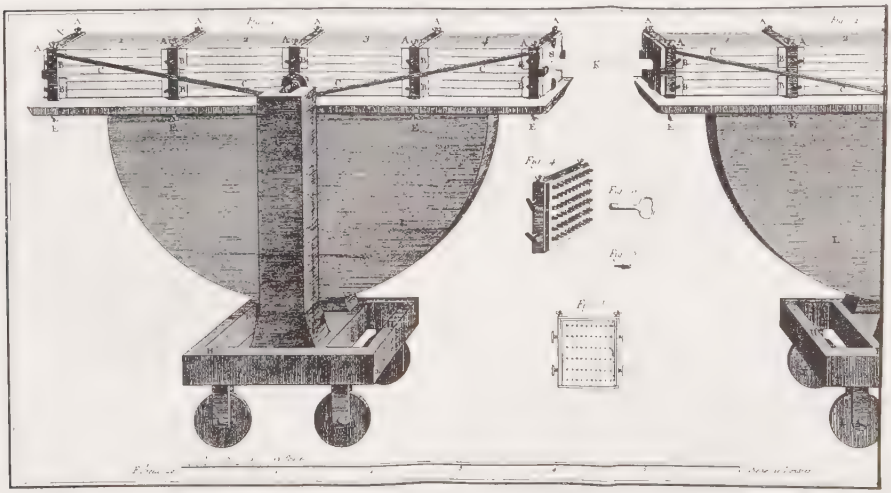
„G. W. Leibniz (1646–1716), one of the great geniuses that ever walked the earth, accepts here the view of Descartes, that primitive matter had a fluid consistency owing to the tremendous initial heat, and that the earth's sherical form was derived from the aggregation of whirling ultimate elements or „monads" of matter. In place of the Cartesian principle of momentum Leibniz starts from a dynamical basis, and assumes a force which accomplished the separation of light from darkness, or, as he also expressed it, the separation of the more active elements of the universe from the more passive. A further

differentiation of the inactive elements, according to their stability and degree of resistance, determined the dry land and the oceans. The escape of heated material from the interior of the earth produced slaggy spots on the earth's surface, and as these increased a glassy crust was formed. Thus the earth was gradually converted from the condition of a radiant sun to a dark planet.

An important part of the volume is that which deals with mineralogy and metals of the Harz Mountains and which contains an account of the mode of their occurence as well as a detailed description of a number of fossils found in the copper schists of Hannover and Brunswick. Leibniz's official position at the court of Hanover enabled him to become familiar with the mines and natural products of the Harz mountains.

A well preserved and uncut copy; marginal stain in the upper margin.

Ravier 440; DSB VII, 149 ff.; Geikie, Founders of Geology, pp. 81–84; Mather & Mason, Source Book on Geology, pp. 45 ff.; Ward & Carozzi, Geology Emerging, 1358; Zittel, Geschichte der Geologie, pp. 36 ff.; Hoover Collection No. 521.



Discovery of Atmospheric Electricity

151 LE MONNIER, PIERRE-CHARLES. Loix du Magnétisme, comparées aux obsérvations & aux expériences, dans les différentes parties du globe terrestre, pour perfectionner la théorie générale de l'Aimant, & indiquer par-là les courbes magnétique qu'on cherche à la mer, sur les cartes réduites. (Première &) Seconde Partie. 2 parts bound in 1 volume. Illustrated by two large engraved folding-out maps and an engraved folding-out plate. XXXI (+ 1 blank), 168, XXIII (+ 1 blank) pp.; XVI, 40 pp. Tall-8vo. Contemporary calf, triple gilt line border on covers, gilt spine with red lettering label (faded).

Paris, Imprimerie Royale, 1776 & 1778. 1480.–

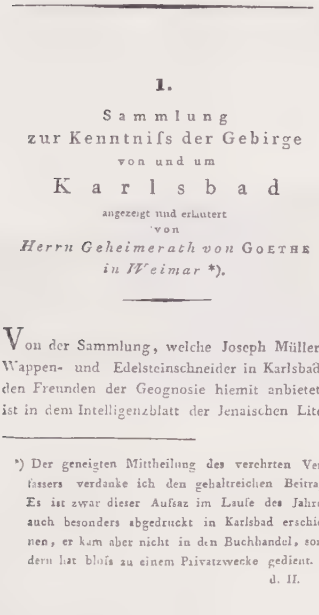
FIRST EDITION of this famous work on the distribution of the earth's magnetic lines together with a discussion of the theory of two and of four centers of magnetic force.

Pierre-Charles Le Monnier (1715–1799), member of a savant family and a great physicist and astronomer himself, had accompanied Clairaut and Maupertuis on their 1736 expedition to Lapland to measure a degree of an arc of meridian. He did most important work on lunar motion. Lemonnier discovered that electricity is ever present in the atmosphere, that it daily increases in quantity from sunrise till about three to four o'clock in the afternoon, diminishing till the fall of dew, when it once more increases for a while, and finally diminished again before midnight, when it becomes insensible.

Of particular importance in the present treatise is the almost unchanged re-issue of Wilcke's famous inclination map depicting the earth's magnetic lines.

A well preserved copy; corners a little bruised.

DSB VIII, 178; Balmer, Beiträge zur Geschichte der Erkenntnis des Erdmagnetismus, pp. 503, 767 ff.; Mottelay pp. 177–8; Ronald, 295; Todhunter, History of the Mathematical Theories of Attraction and the Figure of the Earth, 723; Wheeler-Gift 459.

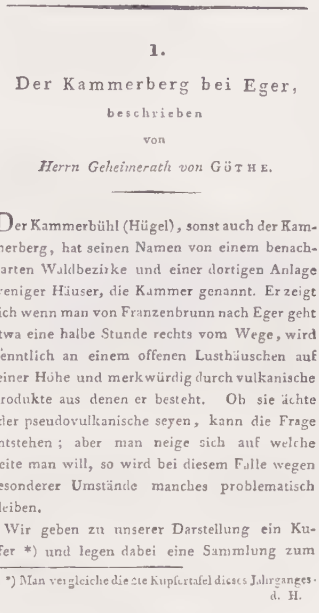


1.

Sammlung
zur Kenntnifs der Gebirge
von und um
Karlsbad
angezeigt und erläutert
von
Herrn Geheimerath von Goethe
in Weimar *).

Von der Sammlung, welche Joseph Müller, Wappen- und Edelsteinschneider in Karlsbad, den Freunden der Geognosie hiemit anbietet, ist in dem Intelligenzblatt der Jenaischen Lite-

*) Der geneigten Mittheilung des verehrten Verfassers verdanke ich den gehaltreichen Beitrag. Es ist zwar dieser Aufsaz im Laufe des Jahres auch besonders abgedruckt in Karlsbad erschienen, er kam aber nicht in den Buchhandel, sondern hat bloſs zu einem Privatzwecke gedient.
d. H.



1.

Der Kammerberg bei Eger,
beschrieben
von
Herrn Geheimerath von Göthe.

Der Kammerbühl (Hügel), sonst auch der Kammerberg, hat seinen Namen von einem benachbarten Waldbezirke und einer dortigen Anlage weniger Häuser, die Kammer genannt. Er zeigt sich wenn man von Franzenbrunn nach Eger geht etwa eine halbe Stunde rechts vom Wege, wird kenntlich an einem offenen Lusthäuschen auf seiner Höhe und merkwürdig durch vulkanische Produkte aus denen er besteht. Ob sie ächte oder pseudovulkanische seyen, kann die Frage entstehen; aber man neige sich auf welche Seite man will, so wird bei diesem Falle wegen besonderer Umstände manches problematisch bleiben.

Wir geben zu unserer Darstellung ein Kupfer *) und legen dabei eine Sammlung zum

*) Man vergleiche die 6te Kupfertafel dieses Jahrganges.
d. H.

Goethe's Fundamental Interest in Geology
Foremost Mineralogist of his Day

152 LEONHARD, KARL CÄSAR VON. Taschenbuch für die gesamte Mineralogie, mit Hinsicht auf die neuesten Entdeckungen. Volumes I to X/1 bound in 13 volumes. Illustrated by 8 engraved portraits, 8 large handcoloured maps and 23 folding-out lithographed plates. 8vo. Uniformly bound in contemporary light brown boards, red lettering labels with gilt lettering.

Frankfurt am Main, J. C. Hermann, 1807–1816. 2900.–

FIRST EDITION in a splendid fresh set, beautifully illustrated.

Carl Cäsar von Leonhard (1779–1862), as the founding editor of the „Taschenbuch für die gesammte Mineralogie", he earned a place among the foremost mineralogists of his time. His prolific writings contributed to the rise of popular interest in geology during the entire 19th century and his influence is still felt to the present day.

A disciple a. o. of Blumenbach at Göttingen, he studied mineralogy and due to an early marriage, he had to accept a position as assessor in the bureau of land taxes in Hanau. In 1807 he originated the „Taschenbuch". This journal soon attained prominence and received widespread saupport from German scientists, and it made Leonhard's name known throughout Europe. In 1830 the name of the journal was changed to the „Jahrbuch für Mineralogie, etc." and from 1833 to 1862 it appeared as the „Neues Jahrbuch für Mineralogie, etc." It remains one of the foremost German scientific journals and one of the leading journals on its subject in the world.

When it was first published, as one of the very first of its kind, it soon attracted the best minds concerned with mineralogy and geology. We may only point out one of the most prominent amongst them, who contributed two articles

Goethe, Johann Wolfgang von: Sammlung zur Kenntnis der Gebirge von und um Karlsbad vol II, pp. 3–32; 1808).

Goethe, Johann Wolfgang von: Der Kammerberg bei Eger (vol. III, pp. 3–24 with an engraved plate; 1809).

The journal also helped the editor in his professional career and already in 1809 he became a counselor and adviser in the bureau of mines of the Grand Duchy of Frankfurt, and in 1811 was appointed the chief of land administration for this regime. After the breakdown of Napoleon's Confederation of the Rhine, he was called to Munich to teach in the academy and in 1818 he was appointed professor of mineralogy at the progressing unviersity of Heidelberg which began to attract so many prominent scientists in those formative years. He held this position until his death. Between 1805 and 1858 Leonhard published a great number of epochal textbooks amongst which we find the most complete work on petrology in the 19th century, a comprehensive study which conclusivly proved the volcanic origin of basalt, etc.

Goedeke IV/3, 583, 39a–40a, 598; Graesse IV, 166; Sammlung Kippenberg 428 & 561; DSB VIII, 245–6; Zittel, History of Geology, pp. 325; Schmid, Goethe und die Naturwissenschaften, 41, 42, 50, 52, 85.

No copy of any of the Leonhard titles in the Hoover collection on Mining and Metallurgy.

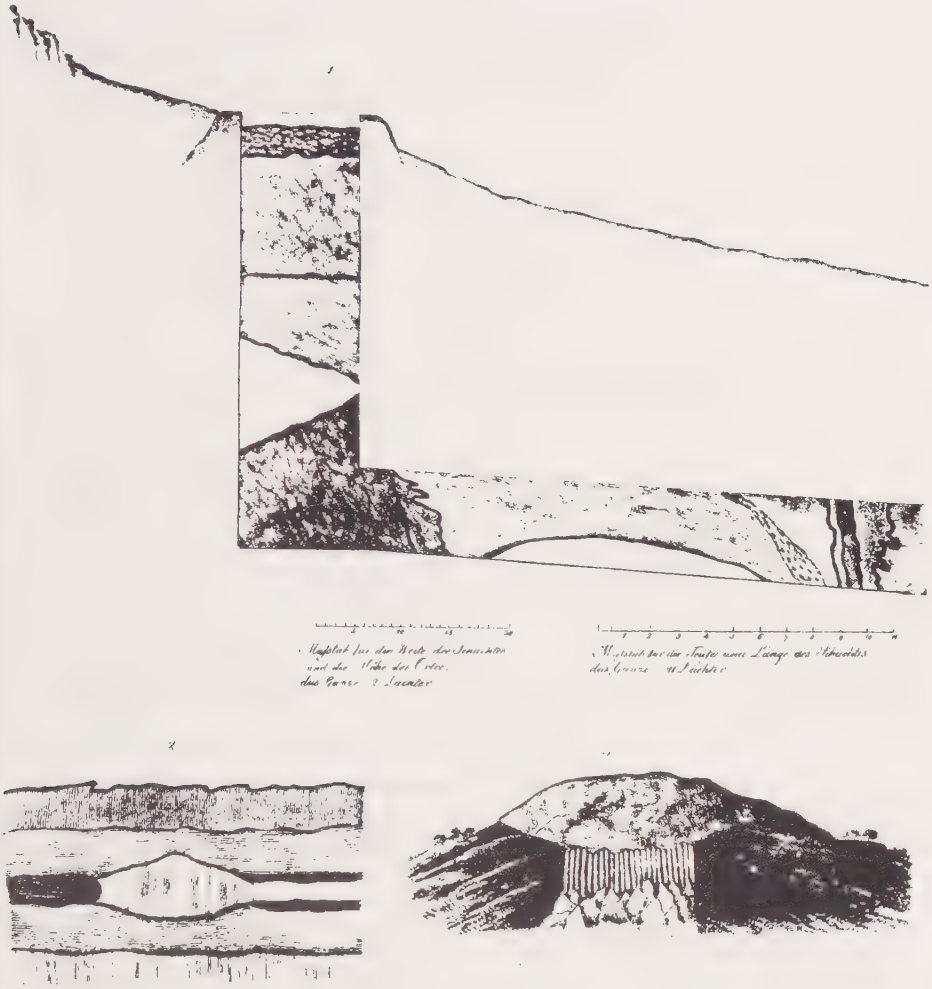
Leonhard's Famous Theory of Basalt
Victory of Volcanism

153 LEONHARD, KARL CÄSAR VON. Die Basalt-Gebilde in ihren Beziehungen zu normalen und abnormen Felsmassen. Nebst einem Atlas mit Ansichten und kolorierten Durchschnitten. 2 volumes plus atlas-volume in together 3 volumes. Illustrated by 20 large lithographic plates. XXII, 498 pp.; X, 536 pp. & 2 pp. publ. ads. Large-8vo and quarto. Contemporary dark green half morocco, gilt spines (atlas newly bound to match).

Stuttgart, Schweizerbart, 1832. 1800.–

FIRST EDITION of a classical work in the history of geological literature. A well preserved set.

While the din of geological warfare resounded across Europe, and the followers of Werner, flaunting the Neptunist flag in every corner of the continent, had succeeded in making the system promulgated from Freiberg almost supplant every other, a series of quiet and desultory researches was in progress, which led to the establishment of some of the fundamental principles of modern geology. James Hutton and his school while the vigorously contended for the igneous origin of the „whinstone" (basalt) rocks, in opposition to the teachings of the Neptunists, looked upon these rocks as „not of volcanic, nor of aqueous, but certainly of igneous origin", having been formed in the bowles of the arth, of



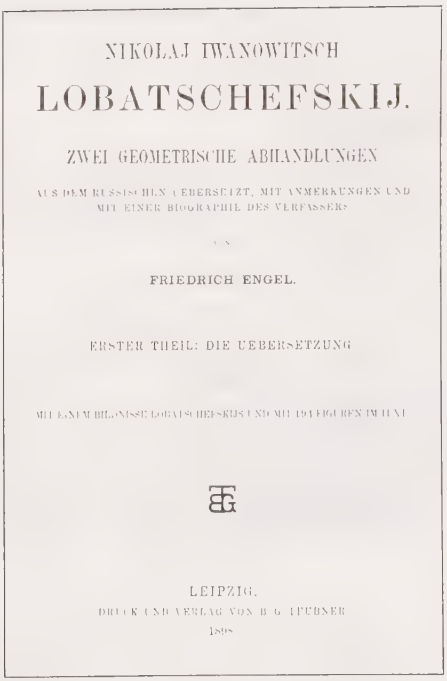
melted matter poured into the rents and openings of the strata. The Neptunists, on the other hand, contented that scheets of basalt regularly interstratified with aqueous deposits must themselves have been precipitated from solution in water. The disputants on either perceived that a third and entirely distinct explanation of the facts could be given.

In his ample monograph on „Die Basalt-Gebilde", Leonhard fully describes the volcanic features of these rocks as displayed in Auvergne, the Eiffel and other districts, and when he comes to deal with the sheets of basalt intercalated among the strata of the Earth's crust, he is chiefly careful to mark their connection with dykes and the proofs they furnish that they have been injected into and have altered the contiguous stata. It would almost appear that if in the earlier years of last century a Vulcanist had maintained the contemporaneity of a basalt-sheet with the sedimentary deposits among which it lay, he would have run some risk of being regarded as having gone over to the Neptunist camp.

Leonhard's comprehensive study conclusively proved the volcanic origin of basalt both with respect to its geological occurrence and to the appearance of the areas where the basalt contacted other rocks. The book aided substantially in the VICTORY OF VOLCANISM.

A very well preserved set, nicely bound; the atlas has been newly bound to match text-volumes; three paper corners in atlas neatly repaired.

DSB VIII, 245 ff.; Geikie, Founders of Geology, 262 ff.; Ward & Carozzi, Geology Emerging, lists seven titles by Leonhard but not the present and the headrun of the journal!



NIKOLAJ IWANOWITSCH

LOBATSCHEFSKIJ.

ZWEI GEOMETRISCHE ABHANDLUNGEN

AUS DEM RUSSISCHEN UEBERSETZT, MIT ANMERKUNGEN UND MIT EINER BIOGRAPHIE DES VERFASSERS

VON

FRIEDRICH ENGEL.

ERSTER THEIL: DIE UEBERSETZUNG

MIT EINEM BILDNISSE LOBATSCHEFSKIJS UND MIT 194 FIGUREN IM TEXT

LEIPZIG.

DRUCK UND VERLAG VON B. G. TEUBNER

1898

Einstein's Friend & Collaborator
Marcel Grossmann Copy

154 LOBATSCHEFSKIJ, NIKOLAJ IWANOWITSCH. Zwei Geometrische Abhandlungen. Aus dem Russischen übersetzt, mit Anmerkungen und mit einer Biographie des Verfassers von Friedrich Engel. 2 parts bound in 1 volume. Illustrated by the author's portrait and 261 text-figures. XVI, 236 pp.; 2 unn. leaves, pp. 237–476. Tall-8vo. Original publisher's half morocco, gilt spine.

Leipzig, Teubner, 1898–1899. 485.–

FIRST GERMAN EDITION in a fine and fresh copy from the library of Einstein's early friend and collaborator in that famous 1912 paper (Weil 58*) with his autograph exlibris in front "Dr. Marcel Grossmann, 1907".

Nikolai I. Lobachevski (1793–1856), the mathematical genius, professor of mathematics at Kazan University whose president he also was, wrote many papers on maths but his chief fame was a mathematical heretic, and a colossally successful one, too. For twenty centuries (2000 years!) Euclid and his system of geometry had remained supreme. It was widely assumed by scholars that maths, and geometry in particular, consisted fundamental truths that existed independently of man. Nevertheless there was one irritating little imperfection in Euclid. His fifth axiom can be stated in a number of ways. Lobachevski took a daring step. He didn't wonder of the 5th axiom could be proved. He wondered it was necessary at all and wheter a geometry might not be built without ist. He published his revolutionary ideas in 1829 and was the first in the field.

Although it was not well received at first the value of Lobachevski's work was fully appreciated one Riemann began his investigations into the fundamental concepts of geometry. Perhaps the fullest vindication came with the advent of Einstein's theory of relativity when it was demonstrated experimentally that the geometry of space is not described by Euclid's geometry. In this context, the present copy formerly in Marcel Grossmann's possession at a time when he and Einstein were close friends and collaborators, is so much more of interest. – A fresh copy.

DSB VIII, 428; Sommerville, Bibliography of Non-Euclidian Geometry, 146 No. 2; PMM 293; Dibner, Heralds of Science, 115.

Important Contribution to Electromagnetic Theory of Light

155 LOMMEL, EUGEN. Ueber die Interferenz des gebeugten Lichtes. Mit 5 lithographierten Tafeln. IV, 50 (+ 1 blank) pp. 8vo. Original printed wrappers. Spine renewed.

Erlangen, Besold, 1875. 165.–

FIRST EDITION, uncut copy. Eugen C. J. Lommel (1837–1899) was professor of physics at the university of Munich where he also became rector the year he died.

In the catalogue of Mach's library only Lommel's lectures „On the Nature of Light", which was translated into English 1875, are listed.

Poggendorff IV, 908; Brit. Opt. Ass. Cat. 128; Mach, Princ. of Phys. Optics, pp. 129–130.

156 MACH, ERNST. Die Prinzipien der Wärmelehre. Historisch-kritisch entwickelt. Mit 105 Figuren und 6 Portraits. VIII, 472 pp. 8vo. Original dark red cloth, gilt lettering.

Leipzig, Barth, 1896. 860.–

FIRST EDITION in a fine fresh copy with Jakob Ackeret's penned exlibris on the title-page.

Mach's PRINCIPLES OF HEAT THEORY was probably the only book ever written on thermodynamics with over a dozen chapters overtly on philosophy. *Boltzmann's (see item no 28)* counteroffensive against Ostwald and „Energeticism" had forced Mach into publishing this strange work before it was truly ready for publication. The chapters on philosophy seem to have been included to persuade, if possible, Boltzmann himself! Critics, on the whole, were not kind to the book.

In spite of some hostilities, however, Mach and his philosophy were in fashion, and several new editions of the book over a period of almost thirty years indicated not only that the books continued to be read but that phenomenalistic or „pure" thermodynamics continued to have its friends and advocates over an extended period of time, even after Mach's point of view dropped out of fashion for some time to be revived only during the past half dozen years.

Blackmore, Mach, pp. 157 ff.; DSB VIII, 600 ff.; Janik & Toulmin, Wittgenstein's Vienna, 1973.

Forerunner of Lamarck
18th Century Marine Geologist

157 MAILLET, BENOÎT DE. Telliamed, ou entretiens d'un philosophe Indien avec un missionaire François sur la diminuation de la mer, la formation de la terre, l'origine de l'homme, etc. Edited by J. A. G(uers). 4 unn. leaves, LXX pp., 3 unn. leaves, 407 pp. Small-8vo. Contemporary calf with spine lettering label, richly gilt decorated spine.

Basel, Chez les Libr. Associés, 1749. 1100.–

FIRST EDITION, second issue, of this fundamental work, in essence an ultraneptunian theory of the earth – the first systematic presentation of a theory of general transformism (Cuvier). A fresh copy from the Prince Starhemberg Library with their exlibris.

Benoît de Maillet (1656–1738) was general consul of the King of France at Cairo 1692–1708. While in Egypt, Maillet wrote most of his system on the diminution of the sea. It was based largely on his geological field observations made during extensive travels throughout Egypt and other Mediterranean countries. Maillet must have taken full advantage of his fluency in Arabic to gain access to the manuscripts of many ancient Arabic authors. For the publication of his system Maillet relies on the Abbé J. B. La Mascrier, who had previously edited the author's important historical and sociological „Description de l'Egypte (1735)". Only ten years after Maillet's death did Le Mascrier reluctantly agree to the publication of the first edition. This unusual delay in publication resulted from the failure of Le Mascrier's editorial work to reduce the dangerous nature of the system; actually, he was willing to be acknowledged only as editor of the third edition. Indeed, even when presented under the name of a fictitious Indian philosopher (his own name spelled backward), Maillet's concepts were unorthodox and highly materialistic.

Maillet's ideas unquestionable influenced many leading naturalists for almost a century, notably Buffon and Cuvier. Although Maillet was certainly a forerunner of Lamarck, this position should not

obscure his major contribution, which is geological. His ultraneptunian theory of the earth, in which everything was explained by the action of a retreating sea, makes him a marine geologist of the 18th century.

DSB IX, 26 ff.; Forerunners of Darwin 1745–1859, pp. 123 ff.; Barbier IV, 673; Poggendorff II, 17.

World's only Electrical Authority

158 MARAT, JEAN-PAUL. Recherches physiques sur l'électricité. Illustrated by five engraved plates, of which three are large folding-out plates. VIII, 461 (+ 3) pp. Tall-8vo. Original grey wrappers bound in contemporary boards, uncut edges.

Paris, de Clousier, 1782. 1600.–

FIRST EDITION in a well preserved copy of Marat's 214 electrical experiments.

„Marat, doctor to the grooms, or perhaps the horses, of the Duc d'Artois, a rabid antiacademician and bilious egoist, the world's only electrical authority: „Everything written on electricity before me", he said in 1783, „is but a heap of isolated, complicated, ill-digested experiments, scattered in 500 volumes." Science had to be extracted from this chaos." (Heilbron)

Many complimentary references are made to Benjamin Franklin, who used to visit him and who was greatly interested in Marat's unusual experiments and reasoning.

Heilbron, Electricity in the 17th & 18th Centuries, p. 429–430; Mottelay, 269; Ronalds 322; Wheeler-Gift 509.

Electric Revolutionary

159 (MARAT, JEAN PAUL.) Mémoire sur l'électricité médicale, coronné le 6 Août 1783, par l'Académie Royale des Sciences, Belles-Lettres & Arts de Rouan. 8, 111 (+ 1 blank) pp. 8vo. 19th century red half morocco, gilt spine.

Paris, L. Jorry & N.-T. Méquignon, 1784. 2200.–

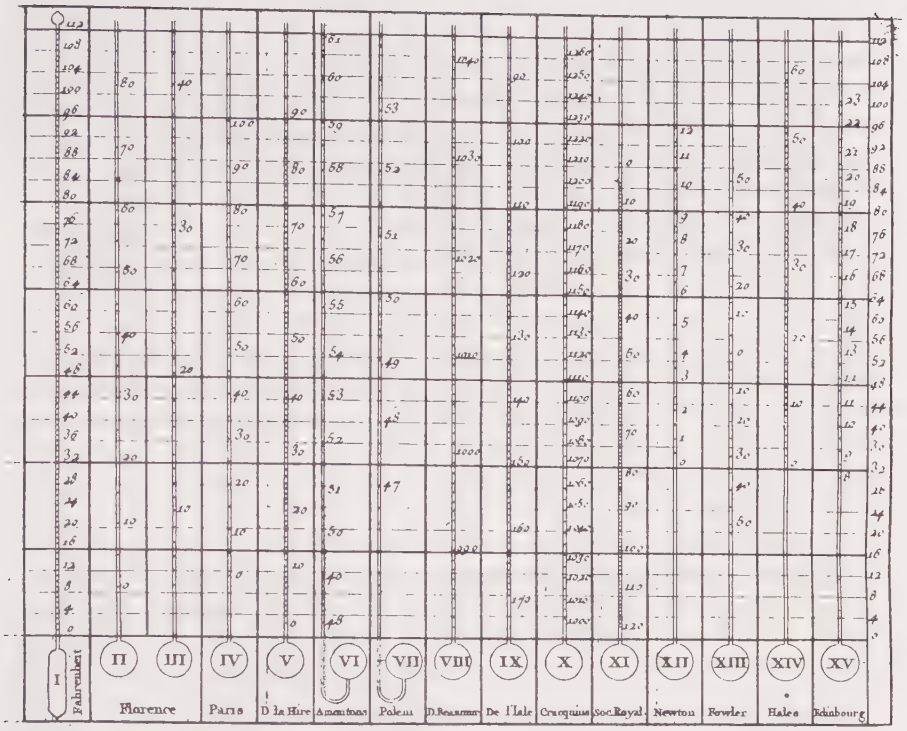
FIRST EDITION in a bright and well preserved copy of one of the „early books on medical electricity" (Wheeler-Gift).

Jean Paul Marat (1744–1793) minutely describes a great number of applications that he made of positive and negative electricity on himself and others. He refers to persons killed by ligthning and adds many curious observations on cats, dogs and pigeons which he electrocuted. (He may not have found this to be very satisfactory and turned to the guillotine during the bloody months and years of the French Revolution in which he was to play such a dominant part.)

A medic by profession, Marat was in great request as a court doctor among the aristocracy and exerted a large influence in the scientific world of Paris. His experiments greatly interested Benjamin Franklin, who used to visit him and Goethe always regarded his rejection by the academy as a glaring instance of scientific despotism. The names of Marat and Mesmer sound odd together, but they represent an important aspect of the radical movement of the 1780's. Mesmersm appealed to radicals in two ways: it served as a weapon against the academic establishment that impeded, or seemed to impede, their own advancement (very much the same situation towards the end of the 20th century to be found in the international oecology movement), and it provided them with a „scientific" political theory. And Marat interpreted the narrowness of the academic establishment in political terms. He regarded academicians as „despots" and „aristocrats" of philosophy, who oppressed those of inferior status and superior genius. The hatred of oppression carried him and his like from philosophy to politics with the outbreak of the Revolution. Marat, the prerevolutionary expert on electricity, anticipated Marat the revolutionary in his demand for something like popular sovereignety in scientific matters.

A good copy including the halftitle „Oeuvres de M. Marat" which lacks sometimes.

Hirsch-Hübotter IV, 66; Ronalds 322; Wheeler-Gift 524; Mottelay 269.



160 MARTIN, BENJAMIN. Dissertations sur la chaleur, avec des observations nouvelles sur la construction et la comparaison des thermomètres. Traduit de l'Anglois par M.***Docteur en Médecine. With an engraved folding-out plate. XVI, 381 (+ 3) pp. 8vo. Contemporary calf, spine renewed.

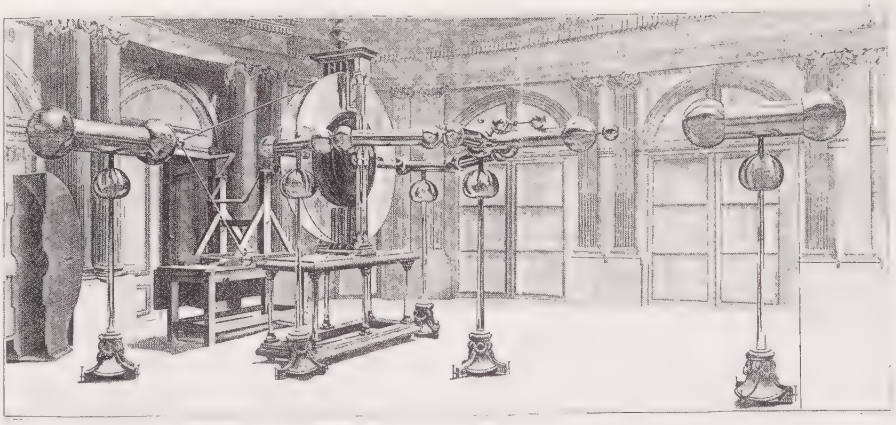
Paris, Jean Thomas Herissant, 1751. 685.–

Apparently FIRST FRENCH EDITION in a well preserved and fresh copy.

Benjamin Martin (1704–1782), autodidact, is remarkable as one of the great popularizers of science in the mid-18th century. He became known internationally, and supplied Harvard College, Mass., with a large proportion of the new instruments needed after the fire of 1764.

„Martin occupe en effet une place particulière, assez proche de celle de Hawksbee, intermédiaire entre celle des grands démonstrateurs à la manière de Desagulliers, et celle des fabricants comme Adams et Dollond." (Daumas). Martin ran first his own school in Chichester and in 1743 became a traveling lecturer in experimental philosophy. By 1755 Martin had settled in London and set up his business in 171 Fleet Street. His shop became well-known for its extensive stock and for Martin's popular lecture-demonstrations, following in the tradition of the Hauksbees and Desagulliers. Hauksbee and his researches are mentioned by Martin on pages 59 ff. and 366 ff.

DSB IX, 141 ff.; Daumas, Les instruments scientifiques aux XVIIe et XVIIIe siècles, pp. 314 ff.

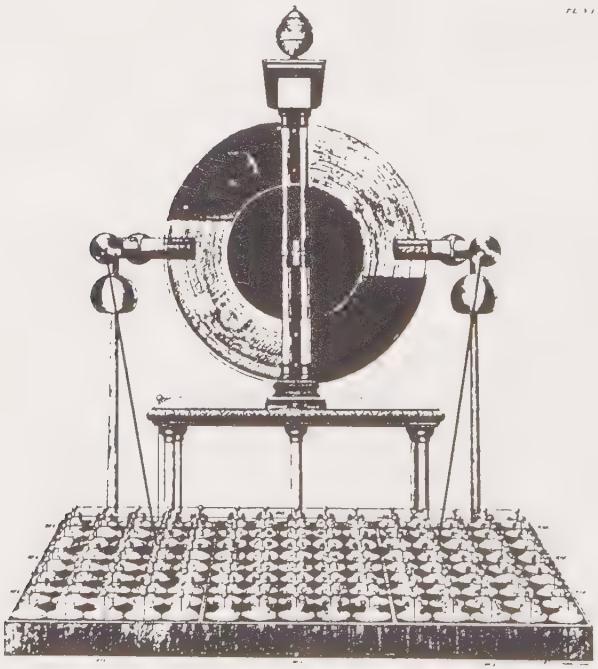


Mightyest Electric Machine Built so far Splendid Illustrations

161 MARUM, MARTINUS VAN. Description d'une très grande Machine Electrique, placée dans le Muséum de Teyler a Haarlem, et des expériments faits par le moyen de cette machine. Illustrated by six large engraved folding-out plates by B. de Bakker, C. H. Koenig, e. a. XXXI (+ 1), 205 (+ 1 blank) pp. 4to. Contemporary calf, red spine lettering label.

Haarlem, Enschedé & Fils; Jean van Walré, 1785. 2600.–

FIRST EDITION and very rare; the original French-Dutch parallel edition in a well preserved copy, hinges somewhat weak bout sound.



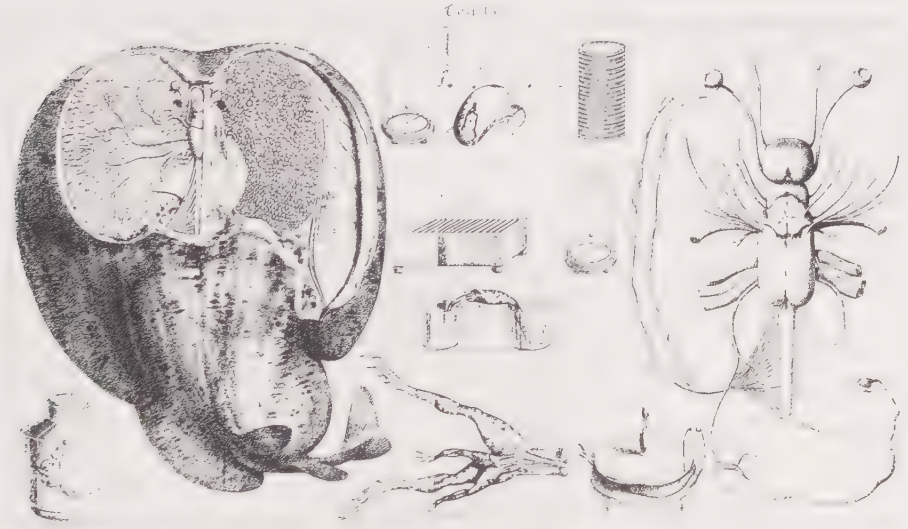
The largest electrostatic generator built in the 1700s was designed by Dr. Martinus van Marum (1750–1837) of Haarlem and constructed by John Guthbertson of Amsterdam. Its two glass plates were 65 inches in diameter and it could strike a 500 000 Volt spark two feet long between the large brass electrodes. With this machine the relative melting of me was determined, the branched nature of sparks was observed, earthquakes were simulate and the effects of electrical discharge on magnetism and on gases were investigated. A large battery of Leyden jars was added in 1789 which is illustrated in the second supplement. The machine is still on view in Haarlem.

Martin van Marum had graduated in medicine and philosophy at the university of Groningen. He began practicing medicine at Haarlem, but devoted himself mainly to lecturing on physical subjects. He became secretary of the scientific society of that city, and under his management the society was advanced to the position of one of the most noted in Europe. He was also entrusted with the care of the collection left to Haarlem by Peter Teyler van der Hulst (1702–1778), a wealthy Haarlem merchant. Van Marum's experiments and researches especially in connexion with electricity were remarkable for their number and variety.

A well preserved and complete set, although there is some damp staining in the second supplement, it is nevertheless a wide margined and well preserved copy printed on strong paper.

Dibner, Early Electrical Machines, pp. 43–49 (with several illustrations incl. the almost full-size reproduction of the plate depicting the great machine); Poggendorff II, 68–69; Bierens de Haan. 3075–6; Ronalds 331; Wheeler-Gift 532 (lists only the first two parts in the original Dutch edition).

The Illustration is much reduced in size, the original engraving measures: 60 x 26 cm!



– No. 162 –

Greatly Influencing 19th-Century Electrophysiology

162 MATTEUCCI, CARLO. Traité des phénomènes électro-physiologiques des animaux suivi d'études anatomiques sur les système nerveux et sur l'organe électrique de la torpille par PAUL SAVI. Illustrated by 6 large lithographed plates. XX, 348 pp. Tall-8vo. Contemporary marbled boards, red spine lettering label.

Paris, Fortin, Masson & Cie., 1844.

And bound with:

MATTEUCCI, CARLO. Essay sur les phénomènes électriques des animaux. Illustrated by a large lithographed plate. VIII, 88, 4 pp.

Paris, Carillan-Goeury & Dalmont, 1840. 1500.–

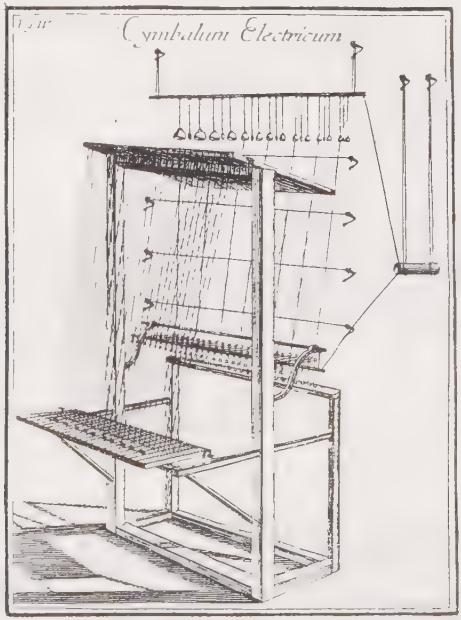
FIRST EDITIONS of both titles, well preserved and entirely uncut copies; previous owner's name cut-off halftitle and titlepage of second title.

Carlo Matteucci (1811–1868), professor of physics at the university of Pisa on the advice of Alexander von Humboldt (to whom and to Arago both titles are dedicated by the author), at first carried out electrophysiological investigations. His reports made his „name known through the European Continent" as Faraday wrote. After he had published its celebrated „Essai sur les phénomènes électrique" in 1840, Johannes Müller encouraged his disciple Emil Du Bois-Reymond to verify Matteucci's experiments. Müller's suggestion truly became Du Bois-Reymond's lifelong professional cue and he published the first volume of his most important work, the „Untersuchungen über thierische Elektrizität" in 1848 the last and final volume of which appeared in 1884 (please see BIBLIOTHECA MEDICA I, 273, no. 81).

Working on torpedoes, Matteucci found that the discharges of the electric organ of the fish were due to impulses arising in the fourth lobe of the medulla, which he called the electric lobe. Mechanical or galvanic stimulation of this lobe constantly produced the electric discharge, the sign of which was not reversed when the direction of the stimulating current was reversed. This discharge could also be produced reflexly by applying pressure to the fish's eyes or by stimulating its body. Both spontaneous and induced discharges after ablation of the cerebral hemispheres, of the optic lobes, and the cerebellum; but they could not be observed after bilateral ablation of the electric lobe.

His other important work was on the resting potential of the frog's muscle, and especially on the action of currents, which he discovered. His work greatly influenced 19th-cxentury electrophysiology.

DSB IX, 176 ff.; McHenry, History of Neurology (Garrison), p. 203; Rothschuh, History of Physiology, pp. 220 ff.; Wheeler-Gift 985 & 1064.



– No. 164 –

The Energy Principle – One of the Fundaments of Modern Science

163 MAYER, ROBERT. Die Mechanik der Wärme. Zwei Abhandlungen. Edited by A. von Oettingen. 90 pp. 8vo. Original grey printed wrappers.

Leipzig, 1911. 250.–

The „Bemerkungen über die Kräfte der unbelebten Natur, 1842" and the „Organische Bewegung in ihrem Zusammenhang mit dem Stoffwechsel, 1845" constitute two of the most fundamental papers ever published in the history of sciences. Originally printed as contributions to the „Annalen der Chemie und Pharmacie" resp. as a small brochure by the Heilbronn printers Drechsler. Both papers in the original editions are of extreme rarity.

Published as no. 180 in „Ostwald's Klassiker der Exakten Wissenschaften".

Cf. Alicke, Printing and the Progress of Man, Catalogue 269, 417; Robert Mayer und das Energieprinzip 1842–1942, pp. 272–296; PMM 323; Dibner, Heralds of Science, 157; Garrison-Morton 606.

First Electric Piano – Electric Transmission of Intelligence

164 (MAZZOLARI, JOSEPH MARIE). Josephi Mariani Parthenii electricorum Libri VI. Illustrated by 2 large engraved folding plates. 188 (recte 288) pp. 8vo. full vellum.

Rome, Generosus Salomon, 1767. 1900.–

FIRST EDITION of what I consider the first poetic history of electricity ever. It is a compendium of contemporary knowledge with ample erudite footnotes, incl. many firsthand accounts. Joseph Bozzoli (1724–1783?), an Italian Jesuit, professor of Natural Philosophy at Rome and a very inquisitive and inventive researcher, is the first (and not Tiberius Cavallo, 1775) to suggest employing the active principle of the Leyden jar for the transmission of intelligence. His plan is to place underground two wires which are to be brought at each station close enough to admit of the passage of a spark. One of the wires is to be connected with the inner coating and the other with the auter surface of a Leyden phial. The sparks observed at the opening between the wires being there made to express any meaning according to a preconcerted code of signals. As Bozzoli did not publish but a few classical texts, his important invention was reported in the present volume by Mazzolari, a fellow Jesuit (1712–1786). This important fact was discovered first by the „Illustrated London News" almost one hundred years later on 26th May 1856. The „Saturday Evening Post" ran an article on it in August 1858 and even the „Cornhill Magazine" for 1860 included a paper on it. This was of course the approbriate period for news of this sort, with an enthusiastic public celebrating the pioneering and haydays of the first mass-communication system, when the first international telegraph lines were opened, the first trans-oceanic cables were laid etc. etc.

However, Mazzolari's work is not only concerned with the „corpus communicatione electricum" (page 33/34) but also with the „tubi electrici in usum medicinae inventi" (p. 75); rheumaticsm and podagra cured by electricity, „parlysis curata" (pp. 77 ff.). Benjamin Franklin's experiments are described as well as those of other contemporary electricians.

Of particular interest and apparently having escaped the historians of music all the same as the historians of telegraphy, is the description of an electric cymbalo, illustrated in a fine engraved plate (pp. 133 ff.) and which Shows the *first electric keyboard instrument.*

De Backer/Sommervogel II, 77 & V, pp. 842 ff.; Mottelay, p. 227 ff.; not listed in Ronalds, Wheeler-Gift, Dibner and many other historians of electricity.

Inscribed by Millikan – Nobel Prize in 1923

165 MILLIKAN, ROBERT ANDREW. The Electron. Its Isolation and Measurement and the Determination of some of its Properties. Illustrated. XII, 268 pp., 1 leaf with publ. ads. 8vo. Original cloth.

Chicago, 1921. 425.–

FIRST EDITION, fifth impression. A well preserved copy with the author's penned inscription of front flyleaf: „With the author's compliments and kind regards to Professor Kasimir Fajans München Deutschland".

In 1909 Robert Andrew Millikan (1868–1953) measured the charge of the electron, a feat for which he was awarded the 1923 Nobel Prize in physics. The award also mentioned the careful experimental work he performed to verify the equation deduced theoretically by Einstein in connection with the photoelectric effect. Millikan by 1921 had transferred from Chicago to the CalTech. He was largely responsible for turning it into one of the most distinguished scientific centers in the world.

Nobel, The Man and His Prizes, pp. 409 ff.; DSB IX, 395 ff.

166 MILLIKAN, ROBERT ANDREWS. Electrons (+ and −), Protons, Photons, Neutrons, and Cosmic Rays. Illustrated. X, 492 pp. 8vo. Original cloth.

Cambridge, 1935. 180.–

FIRST EDITION. A fresh and well preserved copy. Robert A. Millikan (1868–1953) in 1909 was the first to measure the charge of the electron and thereby strenghtend the atomistic conception of electricity. In 1916 he confirmed the photoelectric equation of Einstein according to which the kinetic energy of an electron is proportional to the frequency of the incident radiation multiplied by Planck's constant, h. By varying both energies and frequencies, Millikan obtained an accurate value for h. For his determinations of e and h he was awarded the Nobel Prize in Physics in 1923.

Millikan did much research work on cosmic rays, organizing a world-wide survey in 1934. His work gave a unity to the study of ultra-violet, cosmic, and X-radiation.

Millikan, Autobiography, pp. 100 e. a.; Nobel, Man and His Prize, pp. 429.

MISCELLANEA
CHYMIAE
ET
METALLVRGIAE,

oder:

Hundert und fünf und funfzig
wahre
Experimenta,

aus
denen hinterlassenen Schriften eines berühmten Chymici, verbotenus excerpiret, mit allen von demselben angemerkten Handgriffen und Proceduris

Allen Liebhabern zur Nachahmung und Belustigung vorgelegt, besonders denen Herren Bergofficianten zu Erlängung und Untersuchung verschiedener unausbrüglicher verachteter Steine und Erden.

HOF,
bey Johann Gottlieb Bierling
1766.

– No. 167 –

167 MISCELLANEA CHYMIAE ET METALLURGIAE, oder: Hundert und fünf und fünfzig wahre Experimenta, aus denen hinterlassenen Schriften eines berühmten Chymici, verbotenus gezogen, mit allen von demselben angemerkten Handgriffen und Productis . . . Illustrated with a fine engraved frontispiece depicting mining operations. 4 leaves, 152 p. 8vo. Modern half calf with the original fine coloured end papers.

Hof, J. G. Vierling, 1766. 2480.–

A VERY RARE COLLECTION, published anonymously. „Entirely unrecorded. In the preface the author refers to two books published in 1718 and 1721, ‚Geheimer Natur eröffnete Pforten' and ‚Der sechs Tagewerk dieser Welt geheime Bedeutung', neither of which I can trace." (Duveen 406). Likewise, the only other reference to the present workd we did find in the catalogue of the Neu collection, no. 2779. A very well preserved, clean and fresh copy.

Discovery of Isomorphism

168 MITSCHERLICH, EILHARD. Sur la relation qui existe entre la forme cristalline et les proportions chimiques. 2 parts. With two large engraved plates. Extr. from: „Annales de Chimie et de Physique", vols. XV & XX, pp. 172–190 & 350–419. 8vo. Protective cloth case.

Paris, 1820–1822. 1200.–

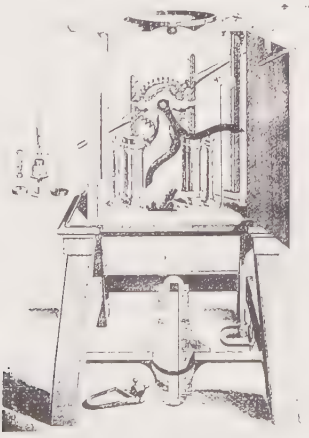
FIRST FRENCH EDITION (the papers were published the same year in Swedish in the Stockholm Academy) of Mitscherlich's two important papers describing the Law of Isomorphism.

Eilhard Mitscherlich (1794–1863) enriched chemistry by beautiful discoveries, and especially advanced it very greatly in the physical direction. In the present papers he did away with the erroneous conecption which ascribed the crystalline form of a substance to the presence of minute quantities of other bodies, and proved irrefutably the connection existing between crystalline form and chemical composition.

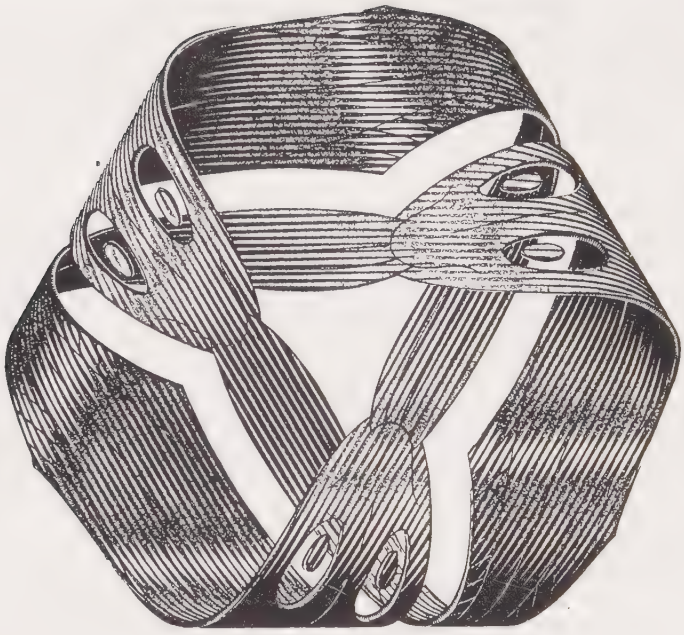
Berzelius, who regarded the discovery of isomorphism as the MOST IMPORTANT SINCE THE ESTABLISHMENT OF THE DOCTRINE OF CHEMICAL PROPORTIONS," endeavoured to arrive at the atomic weights of the elements by the aid of isomorphous compounds. He made extensive use of this new aid to confirm the correctness of his atomic weight determination.

Added is a „Lettre de M. Beudant à M. GAY-LUSSAC, sur les Mémoire de M. Mitscherlich" as well as „Réflexions sur le Mémoire de M. Mitscherlich concernant l'identité de la forme cristalline dans plusieures substances différentes", also published in this journal.

Meyer, History of Chemistry, pp. 231 ff.; Partington IV, 207 ff.



– No. 169 –



Escher's Möbius Band I, 1961

His Greatest Work – A Mathematical Classic – GEB

168A. MÖBIUS, AUGUST FERDINAND. Der barycentrische Calcul ein neues Hülfsmittel zur analytischen Behandlung der Geometrie dargestellt und insbesondere auf die Bildung neuer Classen von Aufgaben und die Entwicklung mehrerer Eigenschaften der Kegelschnitte angewendet. Illustrated by four engraved plates. XXIV, 454, 2 pp. Tall-8vo. Contemporary marbled boards, spine lettering piece.

Leipzig, J. A. Barth, 1827. 4280.–

FIRST EDITION in a well preserved and entirely uncut copy.

Ferdinand August Möbius (1790–1868), pupil of one of Germany's most famous schools: Schulpforta and a latter day descendant of Luther, was professor of astronomy at Leipzig. In 1827 Möbius published his greatest work, which later became a mathematical classic: Der barycentrische Calcul. It was not only his most important mathematical publication, but also the source of much of his later work incl. that on the Möbius strip. He had come upon the fundamental ideas for his barycentric calculus in 1818 and by 1821 decided that they merited book-length treatment. In an appendix to his 1823 astronomical treatise, he had given a first discussion of his new method. As he stated in the forword of the 1827 treatise, the concept of the centroid had been recognized by Archimedes as a useful tool for geometrical investigations.

Möbius proceeded from the well-known law of mechanics, that a combination of weights positioned at various points can be replaced by a single weight of magnitude equal to the sum of the individual weights and positioned at the center of gravity of the combination. Thus Möbius constructed a mathematical system, the fundamental system entities of which were points, to each of which a weight or numerical coefficient was assigned. The position of any point could be expressed in this system by

varying the numerical coefficients of any four or more noncoplaner points. Thus Möbius used an equation such as $aA+aB+cC=D$, where a, b, c are numerical coefficients (positive or negative), and, A, B, C, D, are points, to express the fact that if A, B, C are not collinear, then D must lie in the plane of A, Bs, C. Möbius went on in his treatise to apply this method with noteworthy success to many important geometrical problems. since barycentric coordinates are a form of homogeneous coordinates, their creator is recognized with Feuerbach and Plücker, whose publications were independent and nearly simultaneous, as a discoverer of homogeneous coordinates.

Moreover, Möbius developed important results in projective and affine geometry and also was among the first fully to appreciate the principle of duality and to give a thorough treatment of the cross ratio. He was the first mathematician to make us of a system wherein geometrical entities, such as lines, plane figures, and solids, were consistently treated as spatially oriented and to which a positive or negative sign could be affixed. He presented in this work the construction now known as the MÖBIUS NET. Finally at one point in the treatise he commented that two equal and similar solid figures, which are however mirror images of each other, could be made to coincide, if one were „able to let ony system make a half revolution in a space of four dimensions. But since such a space cannot be conceived, this coincidence is impossible in this case".

DSB IX, 429; cf. Leben und Werk M. C. Escher, 116 e. a.; Hofstadter, GEB, pp. 29 ff.; Coolidge, History of Geometrical Methods, pp. 148 ff.

Sumptouously Illustrated

169 MUSSCHENBROEK, PETER VAN. Essai de Physique . . . Avec une Description de nouvelles sortes de machines pneumatiques et un recueil d'expériences. 2 tomes. Illustrated by 34 finely engraved folding-out plates and the engraved portrait of the author by Houbraken. 2 volumes. XXV (+ 3), 914 pp., 16 unn. leaves, 63 (+ 1) pp., 8 pp. (list of instruments). 4to. Contemporary smooth vellum, spine lettering labels. Leyden, Samuel Luchtmans, 1739. 2780.–

FIRST FRENCH EDITION of the celebrated classic of experimental physics based on the author's Utrecht lecture notes. It is one of the FIRST TEXTBOOKS OF EXPERIMENTAL PHYSICS by one of the three leading Dutch exponents of „experimental philosophy" (see also 's-Gravesande, Boerhaave). A well preserved and nicely bound set. From the library of David P. Wheatland.

Pieter van Musschenbroek (1692–1761), professor of experimental physics at Leyden University, discovered the operation of the „Leyden jar" or condenser, and therewith provided a means for storing, or ‚condensing', electrical charges. In the present treatise he describes a. o. the effect of weather on electrified bodies, the behaviour of electrified bodies in vacuo, electrical screening, the magnet etc. etc. Van Musschenbroek, striving to conserve electricity in a conductor and to delay the loss of its charge in air, attempted to use water as the conductor isolating it from air in a non-conducting glass jar. However, when he charged up the water through a wire leading from an electrical machine he found the electricity dissipated as quickly as ever. His assistant, Andreas Cuneus, while holding a jar containing charged water, accidentally touched the inserted wire with his other hand and got a frightening shock. He had formed one ‚plate', the charged water being the other and the glass jar the intervening ‚dielectric'. A CONDENSER WAS BORN. The physical experience was so alarming that letters flew out from Leyden to fellow physicists. Nollet, recognizing the spectacular value of this discovery, immediately published excerpts. Besides these electrical experiments. Musschenbroek in the chapter entitled „De la Cohésion (des Corps . . .)", describes a series of a accurate laboratory experiments to test the behaviour of building materials under stress.

The entire second volume is dedicated to the problem of light: the refraction of light, rays bouncing of surfaces, the different refrangibility of rays, description of the eye, of vision, dioptrics and catoptrics;

the description of the air and of sound, meteoric topics etc. The part on the new pneumatic machinery starts with a new pagination and is beautifully illustrated with fine large plates. At the end of this volume there is to be found a listing of the instruments and machines used by Musschenbroek in his laboratory and which he described in the work. Each entry with a price notation. This sales-catalogue of the academic instrument maker is very rare and lacks in most copies of the „Essai".

DSB IX, 596; Roller II, 223; Wheatland 163/1739; Wheeler Gift I, 300; Wolf, History of Science . . . 18th, II, 517 ff.

Third Law of Thermo-Dynamics

170 NERNST, WALTHER. Die theoretischen und experimentellen Grundlagen des neuen Wärmesatzes. Illustrated with 21 figures. VII, 218 pp. 8vo. Original blue half cloth.

Halle, 1918. 350.–

FIRST EDITION of an influential book. Walther Nernst (1864–1941) was professor of physical chemistry in Göttingen, later in Berlin where he became director of the famous „Physikalisch-Technische Reichsanstalt".

In the present work Nernst gives a comprehensive survey of the work on the New Heat Theorem which is also called the third law of thermo-dynamics, and which he had discovered in 1906: the impossibility of actually reaching the absolute zero temperature. Nernst received the Nobel Prize for his work in 1920.

Partington (who had worked in Nernst's laboratory with him 1911–1913) IV, 633 ff.; Cajori, Hist. of Physics, p. 321; Deutsche Nobelpreisträger, 1968, p. 131; Nobel, The Man and His Prize, pp. 324 ff.

171 NEUGEBAUR, TIBOR (TH.) Collection of 20 original offprints chiefly from the „Zeitschrift für Physik" bound together in one volume. Tall-8vo. Contemporary cloth, original printed wrappers bound in.

1. *Berechnung der Gitterkonstante des Kaliumchlorids* (in collaboration with Paul Gombás). 17 (first blank) pp. Berlin, 1934.
2. *Zur Theorie der Polarisationsenergie im kubischen Gitter.* 5 (+ 1 blank) pp. Berlin, 1934.
3. *Berechnung der Konstanten des HCl-Moleküls.* 10 pp. 1934.
4. *Zur Theorie der Ionenverfestigung.* 7 (+ 1 blank) pp. 1935.
5. *Über die Elektronenleitung und die Gitterstabilität binärer Kristalle.* 17 (+ 1 blank) pp. 1935.
6. *Über die Berechnung der höheren Näherungen der Polarisationsenergie im Kristallgitter.* 6 (first blank) pp. 1936.
7. *Berechnung der Konstanten des Methanmoleküls.* 20 (first blank) pp. 1936.
8. *Theorie der Refraktionsverminderung von Elektrolytlösungen.* 11 (+ 1 blank) pp. 1936.
9. *Über die Herleitung der Eigenfunktion in zweiter Näherung* im Falle einer gleichzeitigen zeitabhängigen und zeitunabhängigen Störung. 12 (first blank) pp. Budapest, 1936.
10. *Über die Ionendeformation in binären Kristallen* 9 (+ 1 blank) pp. Leipzig, 1936.
11. *Über die Berechnung der Polarisationsellipsoide der Molekeln.* 12 pp. Berlin, 1936.
12. *Über die Berechnung der ultravioletten Absorptionsfrequenzen der Alkalihalogenide.* 12 pp. 1937.
13. *Über die Ionendeformation im Wurtzgitter.* 8 pp. Budapest, 1937.
14. *Über die Stabilität des Molekül- und Ionengitters bei den Halogenwasserstoffen und den Alkalihalogeniden.* 10 pp. Leipzig, 1937.

15. *Über die Berechnung der ultraroten Schwingungsfrequenzen der Hydridmoleküle.* 26 pp. Budapest, 1937.
16. *Zur Theorie der Refraktionsverminderung von Elektrolytlösungen.* 9 (+ 1 blank) pp. Budapest, 1937.
17. *Berechnung der van der Waalschen Wechselwirkung von edelgasartigen Ionen mit Berücksichtigung des Elektronenaustausches.* 10 pp. Berlin, 1937.
18. *Über die Berechnung der Energie des Methanmoleküls.* 8 pp. Budapest, 1938.
19. *Über die quantenmechanische Umdeutung der Silbersteinschen Theorie.* 12 pp. Leipzig, 1938.
20. *Über den vom Elektrospin herrührenden Paramagnetismus der Moleküle.* 10 (First and last blank) pp. Berlin, 1940.

– INSCRIBED BY THE AUTHOR – 400.–

From the library of Kasimir Fajans.

Fundamental Work in 19th Century Physics

172 NEUMANN, FRANZ ERNST. Die Gesetze der Doppelbrechung des Lichts in comprimirten oder ungleichförmig erwärmten unkrystallinischen Körpern. Eine am 8ten November 1841 in der Königlichen Akademie der Wissenschaften zu Berlin gelesene Abhandlung. Mit einer Kupfertafel. 1 leaf, 254 pp., 1 blank leaf. 4to. Original blue boards.

Berlin, 1843. 1450.–

FIRST EDITION, wide margined and untrimmed copy published in the Academy's series „Abhandlungen . . . aus dem Jahr 1841, II". Corners of boards, top of spine a little roughed. Neumann was among the first to attribute dispersion to the influence of the ponderable particles on the particles of aether.

Franz Ernst Neumann (1798–1895) and his contemporary *Wilhelm Weber (see item no 268)* were the founders of the electrodynamic school in Germany, which later included a. o. RIEMANN (No 207) CARL NEUMANN, and LORENZ. Neumann was professor of mathematics, physics and mineralogy at Königsberg University. He extended the Dulong-Petit law to include compounds having similar chemical constitutions. His work on optics contributed to the establishement of the dynamical theory of light, and he formulated mathematically the laws of induction of electric currents. He also aided in developing the theory of spherical harmonics.

Neumann was a highly influential teacher; many of his students became outstanding scientists: Kirchoff, Strehlke, Clebsch, Borchardt, Carl Neumann, W. Voigt e. a.

DSB X, 26 ff.; Whittaker, History of the Theories of Aether and Relativity I, pp. 137–8; 166–167; 198–200; Todhunter, History of the Theory of Elasticity etc. II/2, p. 3 & 1221.

173 NEUMANN, FRANZ. Hydrodynamische Untersuchungen nebst einem Anhange über die Probleme der Elektrostatik und der magnetischen Induction. XL, 320 pp. 8vo. Contemporary half cloth.

Leipzig, Teubner, 1883.

And with:

NEUMANN, FRANZ. Vorlesungen über elektrische Ströme. Illustrated. X, 308 pp. 8vo. Contemporary half leather.

Leipzig, 1884.

And with:

NEUMANN, FRANZ. Vorlesungen über die Theorie der Elasticität der festen Körper und des Lichtäthers. Illustr. XIV, 374 pp. 8vo. Contemporary half cloth.

Leipzig, 1885.

And with:

NEUMANN, FRANZ. Vorlesungen über theoretische Optik. Edited by E. Dorn. With text illustrations and the fine portrait of Neumann by Louis Neumann. VIII, 310 pp. 8vo. Contemporary half cloth.

Leipzig, Teubner, 1885.

And with:

NEUMANN, FRANZ. Vorlesungen über die Theorie der Capillarität. Edited by A. Wangerin. Illustr. X, 234 pp. 8vo. Contemporary half cloth.

Leipzig, 1894. 485.–

FIRST EDITIONS of the complete set of the „Vorlesungen"; well preserved copies.

DSB X, 26. Especially TODHUNTER, History of the Theory of Elasticity and of the Strength of Materials II/2, Chapter XII and numerous other references.

174 NEUMANN, JOHN VON. Continuous Geometry. In: „Proceeding of the National Academy of Sciences of the USA, vol. 22/2." 17 pp. Original printed wrappers.

Washington, 1936. 250.–

FIRST EDITION of this important paper by John von Neumann (1903–1957) who may have been one the last people able to span the fields of pure and applied mathematics. Apart from the theory of games (please see my catalogue PRINTING AND THE PROGRESS OF MAN, part X, 282, no. 193a) von Neumann did important work in advancing continuous geometry as well as in the theory of operators. Dissatisfied with the resources then available, von Neumann developed a broad knowledge of the design of computers and with his interest in the general theory of automata became one of the founders of a whole new discipline which led to new industries and perhaps even to an industrial revolution, the third altogether.

DSB XIV, 88 ff.; Coolidge, History of Geometrical Methods, 251; Goldstine, Computer from Pascal to von Neumann, pp. 181 ff.

Discouvery of Law of Octaves
First Explicit use of Idea of „Atomic Number"

175 NEWLANDS, JOHN ALEXANDER REINA. On the Discovery of the Periodic Law and on Relations among the Atomic Weights. Illustrated with 2 large folding tables. VIII, 39 pp. & 16 pp. publisher's ads. Small-8vo. Original dark green cloth, gilt lettering on spine and front cover.

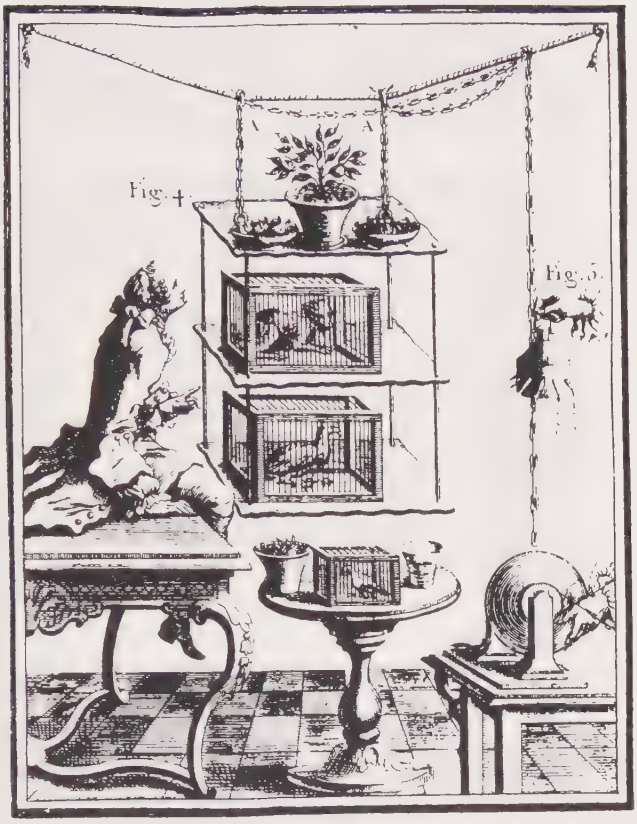
London, Spon, 1884. 850.–

FIRST EDITION of John Alexander Reina Newlands (1837–1898) famous book on the discovery of the law of octaves. A well preserved, fresh copy.

Newlands, who had studied under Hofmann, began in 1863 to publish a series of short papers in the „Chemical News" on regularitiesa among atomic weights and on 20th August 1864 gave an abbreviated table of the elements. This then was the FIRST EXPLICIT USE OF THE IDEA OF „ATOMIC NUMBER". He had arranged the known elements in order of increasing atomic weights, and noted that this arrangement also placed the properties of the elements into at least a partial order. Members of the same group stood to each other in the same relation as the extremities of one or more octaves in music.

In this relationship, which Newlands called the Law of Octaves, there is contained THE IMPORTANT IDEA OF A PERIODIC RECURRENCE OF PROPERTIES, but the significance of this fact was not realized. The classification, moreover, was obviously imperfect as it made no allowance for the existence of elements still to be discovered. The law, therefore, found no acceptance – met rather with ridicule – at the time, and the truth which lay concealed in it was revealed only at a later date in the light of the greater and more clearly discerned generalization known as the Periodic Law.

Partington IV, pp. 886–888; Findlay, 100 Years of Chemistry, pp. 47 ff; Soddy, History of Atomic Energy, p. 23.



Fine Bindings
Earliest Illustration of Electrical Luminious Letters

176 NOLLET, ABBÉ JEAN-ANTOINE. Collected works under the following individual titles: Leçons de Physique Expérimentale. 9th edition. 6 volumes. – L'art des Expériences, ou Avis aux Amateurs de la Physique, sur le Choix, la Construction et l'usage des Instrumens. 3rd edition. 3 volumes. – Recherches sur les Causes Particulières des Phénomènes Electriques . . . New edition. 1 vol. – Lettres sur L'électricité dans lesquelles on examine des découvertes . . . depuis l'année 1752. New edition. 3 volumes. – Essai sur L'électricité des Corps . . . 5th edition. 2 volumes. With numerous engraved folding plates. Together 15 volumes. 8vo. Contemporary half brown calf with two coloured spine labels, richly gilt spine.

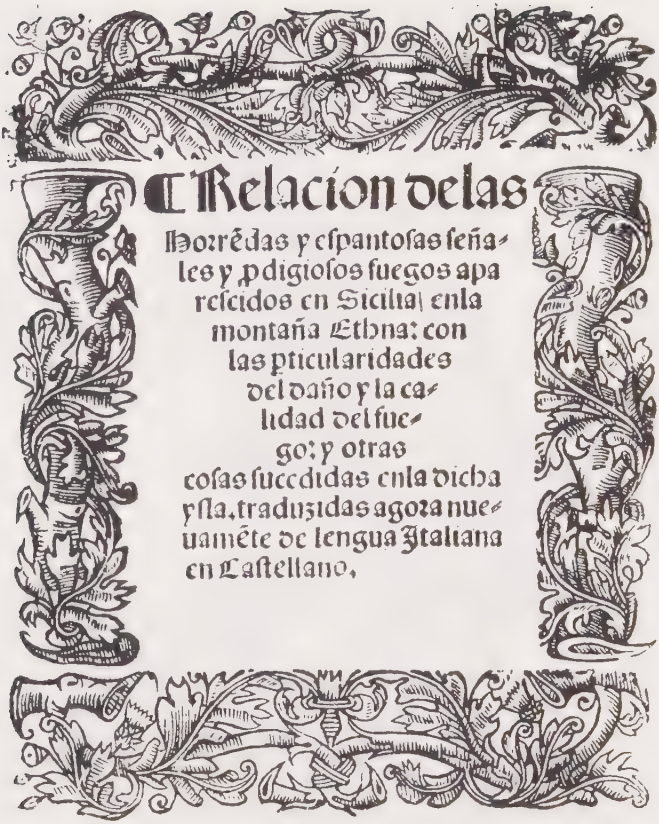
Paris, Durand, Guerin, 1754–1783. 2800.–

A FINE SET of the principal works of the famous French scientist Jean-Antoine Nollet *uniformly bound in a vey attractive half calf with charming gilt decorations and spine labels.*

Nollet (1700–1770) was the first man in France to make experiments with a Leyden jar. He was the first to observe that pointed bodies electrified give out streams of light (the smallest points displaying „brushes of electric light", but they do not exhibit as powerful indications of electricity as are shown by blunt bodies.

His letters contain a. o. five letters addressed to Benjamin Franklin, with theories of which he did not agree with „les prétentions de l'école de Philadelphie".

Mottelay, Bibliographical History of Electricity and Magnetism; Poggendorff, Geschichte der Physik 869–70; Heller, Geschichte der Physik II, 484–85.



With the Large Volcano Map

179 ORDINAIRE, CLAUDE NICOLAS. Histoire naturelle des volcans, comprenant les volcans soumarins, ceux de boue, et autres phénomènes analogues. Illustrated by the large engraved map by Tardieu. XVI, 342 pp. Tall-8vo. Contemporary full light brown calf, richly gilt decorated spine with red lettering label, double gilt line & fleural border on both covers.

Paris, Levrault, 1802. 1500.–

FIRST EDITION in a well preserved copy; as almost inevitably with large folding maps bound in octavo volumes, an insignificant marginal tear skillfully mended.

Claude Nicolas Ordinaire's (1736–1808) account of volcanoes is one of the very first comprehensive modern ones to have been published. According to the most reliable Poggendorff it is also the Abbé's only publication to which we have added another relating item:

ETNA. – Relacion de las borredas y espanosas senales y pdigiosos fuegos aparescidos en Sicilia en la montana Ethna: con las pticularidades del dano y calidad del fuego: y otras cosas sucedidas en la dicha ysla, traduzidas agora neuvamente de lengua Italiana en Castellano. Woodcut title-border. 4 unn. leaves. Small-4to. Vellum bound.

(Madrid, 1536?).

FIRST EDITION IN SPANISH of the first printed account of volcanic activity. A well preserved copy.

Poggendorff II, 331; Ward-Carozzi, Geology Emerging, 1689; Zittel, Geschichte der Geologie, 392.

180 OSTWALD, W. Die Farbenfibel. 2nd – 3rd improved edition. With 8 illustrations and 200 color samples. VIII, 46 pp. 8vo. Original boards.
Leipzig, 1917. 185.–
The famous book on colours by Ostwald. A fine copy.

One of the Founders of Colloid Chemistry

181 OSTWALD, WOLFGANG. Grundriss der Kolloidchemie. Mit einem Portrait von Thomas Graham. XIV, 525 (+ 3 pp. publ. ads.) Tall-8vo. Original blue cloth.
Dresden, Steinkopff, 1909. 280.–
FIRST EDITION as very good copy.
Carl Wilhelm Wolfgang Ostwald (1883–1943) was the second child of Wilhelm Ostwald. He studied at Leipzig, and taught there from 1907, after two years in Berkeley, California, as research assistant to Jacques Loeb. Ostwald became professor of colloid chemistry in 1915 and director of the colloid chemistry division of the physical-chemical institute at Leipzig (from 1923). Ostwald was one of the founders of colloid chemistry. He defined colloids as disperse systems that are generally polyphasicand that posses particles 1–100 millimicrons in size. He discovered the rule of colour dispersion in the optics colloidal systems, explained colloids' irregular flow behaviour, textural viscosity, and textural turbulence, and developed a method of foam analysis.
DSB X, 251; Partington IV, 729 ff.

FUNDAMENTAL WORK ON MINING & METALLURGY
– No. 189 –

182 OTT, HEINRICH. – The Heinrich Ott Collection of special author's offprints from various scientific journals (Zeitschrift für Physik, Annalen der Physik, Physikalische Blätter, Zeitschrift für Kristallographie, Proceedings of the RS, etc. etc.) counting a total of 482 pieces arranged alphabetical in five boxes.

Various Places, 1914–1960.

Added to this collection of usually more than two papers attributed to one author, there are three additional boxes containing approx. 200 titles.

The following scientists and research workers are represented in the OTT COLLECTION:

Ananthakrishnan, R.	(7; 1935–1938)	Joos, G.	(5; 1924–1926)
Arkel, A. E. van	(7; 1924–1927)	Kettmann, G.	(2; 1923–1929)
Beckenkamp, J.	(4; 1911–1926)	Kiessig, H.	(2; 1934–35)
Bernal, J. D.	(4; 1924–1929)	Kirchner, F.	(8; 1926–1933)
Borrmann, G.	(4; 1938–1959)	Kulp, M.	(2; 1932–33)
Bouwkamp, C. J.	(7; 1947–1950)	Kunze, P.	(6; 1931–1939)
Bouwers, A.	(2; 1923–1925)	Londsdale, Kath.	(6; 1931–1938)
Bradley, A. J.	(4; 1927–1935)	Ludloff, H.	(2; 1929–1931)
Brandenberger, E.	(3; 1927–1928)	Madhava Rao, B. S.	(7; 1936–1937)
Braunbeck, W.	(6; 1949–1957)	Maecker, H.	(2; 1950–52)
Brentano, J.	(6; 1925–1938)	Mark, H.	(17; 1923–1929)
Brill, R.	(7; 1927–1942)	Meissner, H.	(2; 1951)
Brillouin, L.	(4; 1913–1925)	Meissner, W.	(14; 1948–1959)
Burkhardt, H.	(1; 1954)	Meixner, J.	(8; 1933–1960)
Clusius, K.	(4; 1934–1935)	Müller, A.	(9; 1929–1939)
Dehlinger, U.	(9; 1927–1935)	Nagendra Nath, N. S.	(3; 1936)
Ehrenberg, W.	(7; 1926–1934)	Neuert, H.	(2; 1935–1937)
Eisenhut, O.	(2; 1929–1930)	Niessen, K.	(29; 1926–1951)
Eulitz, W.	(2; 1929–1930)	Nordheim, K.	(2; 1923)
Ewald, P. P.	(11; 1914–1937)	Oke, B. Y.	(5; 1936–37)
Franz, W.	(6; 1948–1960)	Ott, H.	(13; 1926–1949)
Frauenberger, F.	(8; 1948–1959)	Pauling, L.	(2; 1926–1927)
Gailer, K.	(5; 1933–1938)	Raman, C. V.	(12; 1931–1958)
Glocker, R.	(13; 1924–1935)	Renninger, M.	(2; 1931–1937)
Goldschmidt, V. M.	(2; 1927)	Rinne, F.	(5; 1925–1927)
Grimm, H. G.	(12; 1922–1938)	Robertson, J. M.	(12; 1933–1939)
Hanle, W.	(7; 1929–1954)	Rösch, S. W.	(1; 1926)
Hauser, E. A.	(3; 1926–1928)	Schiebold, E.	(3; 1930–1933)
Havinghurst, R. J.	(3; 1926–1928)	Schlomka, T.	(4; 1933–1938)
Heckmann, G.	(3; 1924–1925)	Schumann, W. O.	(8; 1942–1955)
Hermann	(5; 1928–1932)	Seyfarth, H.	(2; 1928)
Herzfeld, K. F.	(10; 1923–1927)	Ubbelohde, A. R.	(4; 1937–1938)
Herzog, G.	(4; 1929–1935)	Unsöld, A.	(3; 1926–1927)
Heywang, W.	(6; 1950–1959)	Vegard, L.	(2; 1925–1928)
Hönl, H.	(6; 1925–1953)	Venkateswaran, C. S.	(4; 1935–1936)
Huggins, M. L.	(2; 1936)	Weizel, W.	(5; 1929–1930)
Hylleraas, E.	(4; 1925–1926)	Wentzel, G.	(16; 1922–1927)
Jahn, H. A.	(3; 1937–1938)	Wolter, H.	(7; 1950–1952)
Jamesa, R. W.	(7; 1927–1934)	Wyckoff, R. W. G.	(28; 1924–1936)
Jentzsch, F.	(2; 1931)		

The names of E. Bartholomé, G. W. Bradley, E. M. Firth, Leo Szilard, H. Wigner, et al. turn up in connection with the above authors as collaborators in one or the other papers.

Almost ten percent of the papers carry personal presentation inscriptions by their authors; several of them to ARNOLD SOMMERFELD in whose collection some of the papers were before they came into Heinrich Ott's collection.

Heinrich Ott (1894–19?) was professor of theoretical physics at Würzburg University. He published a number of papers in crystallography and x-ray interferences. The collection is sold enbloc only; not subject to return. 3000.–

Poggendorff VIIa, pt. III, p. 488.

183 PAULI, WOLFGANG. Über die Gesetzmässigkeiten des anomalen Zeemaneffektes. Offprint from „Zeitschrift für Physik", vol. 16, pp. 155–164. 8vo. Original printed wrappers.

Berlin, 1923. 150.–

FIRST EDITION.

184 PAULI, WOLFGANG. Über das Wasserstoffspektrum vom Standpunkt der neuen Quantenmechanik. OFFPRINT from the „Zeitschrift für Physik, 36". 30 (first and last blank) pp. 8vo. Orig.printed wrappers.

Berlin, 1926. 250.–

FIRST EDITION of an important paper; a well preserved and fresh copy. At the same time in which Paul Dirac published his „The Quantum Algebra", Wolfgang Pauli, on the basis of matrix mechanics, arrived at the solution of the hydrogen problem and, in addition, gave a matrix-mechanical derivation of the Stark effect. Finally, Pauli showed in the same paper how the new matrix mechanics could easily solve the problem of crossed electric and magnetic fields (that is, the problem of calculating the energy perturbations in the hydrogen spectrum if the atom is acted on by such fields), a problem which gave rise to insurmountable difficulties if subjected to the treatment of the older quantum theory.

Jammer, Conceptual Development of quantum Mechanics, p. 235.

Author's Presention Copy

185 PAULI, WOLFGANG. Über Gasentartung und Paramagnetismus. Offprint from „Zeitschrift für Physik", vol. 41, pp. 81–102. 8vo. Original printed wrappers.

Berlin, 1927. 150.–

FIRST EDITION. Inscribed by Wolfgang Pauli on frontcover „Herrn Ott".

186 PAULI, WOLFGANG. Zur Quantenmechanik des magnetischen Elektrons. In: Zeitschrift für Physik, volume 43, pp. 601–623. 8vo. Original yellow printed wrappers.

Berlin, Juli 1927. 125.–

FIRST EDITION in a well preserved copy.

187 PAULI, WOLFGANG. Exclusion Principle and Quantum Mechanics. Lecture given in Stockholm after the Award of the Nobel Prize of Physics 1945. 51 (+ 1 blank) pp. 8vo. Original printed wrappers.

Neuchâtel, Griffon, 1947. 150.–

FIRST EDITION; uncut copy from the library of Jakob Ackeret with some underlinings in his hand.

In 1924 Pauli (1900–1958) enunciated his „exclusion principle" with which much of the then existing

knowledge of atomic structure fell into order: no two electrons in an atom can be in the same quantum state. For the discovery of this principle, also called the Pauli principle, he was awarded the 1945 Nobel Prize for Physics.

Weisskopf, Physics in the 20th Century, pp. 112 ff.

The Conscience of Theoretical Physics

188 PAULI, WOLFGANG. Collected Scientific Papers. In Two Volumes. Edited by R. Kronig and V. F. Weisskopf. With a portrait. XXVIII, 1133 (+ 1 blank) pp.; XIV, 1408 pp. plus a blank leaf. 4to. Original green publishers cloth.

New York, 1964. 450.–

FIRST COLLECTED EDITION in a well preserved and fresh set. The collection contains all the famous papers starting with Pauli's „Relativitätstheorie" in the „Enzyklopedie der mathematischen Wissenschaften" which Einstein himself reviewed in „Naturwissenschaften", saying that „no one studying this mature, grandly conceived work would believe that the author is a man of twenty-one. Further we find the celebrated paper announcing the discovery of the exclusion principle for which Pauli was awarded the 1945 Nobel Prize in Physics as well as the article which originally appeared in the „Handbuch der Physik" on „Die Allgemeinen Prinzipien der Wellenmechanik" which still stands today without a change so clearly was it put.

DSBd X, 422 ff.; Weisskopf, Physics in the 20th Century, pp. 112–118.

Fundamental Work on Mining and Metallurgy in Bohemia

189 PEITHNER VON LICHTENFELS, JOHANN THADDÄUS. Versuch über die natürliche und politische Geschichte der böhmischen und mährischen Bergwerke. Illustrated by the great engraved titlepage and 14 charming engraved large pictorial vignettes by J. E. Mansfeld und J. Adam as well as a large engraved folding-out map. 3 unn. leaves, pp XII–XX, 464 pp., 17 unn. leaves. Folio. Original grey publisher's wrappers.

Wien, M. A. Schmidt, 1780. 3900.–

FIRST EDITION in a very good copy, fresh and clean; entirely uncut edges and very wide paper margins.

Johann Thaddäus Anton Peithner Edler von Lichtenfels (1727–1792) was professor of mining and mining inspector in Prague. In this fundamental work on every aspect of mining in the former Austrian mines in todays Chechoslovakia. The very elaborate engraved vignettes depict mining scenery and the iconography of coins made in various mints adjoined to the mines.

Ferchl 399; Hoover, De Re Metallica, No. 629; Poggendorff II, 389; Wurzbach XV, 82.

190 PÉTER, RÓZSA. Rekursive Funktionen in der Komputer-Theorie. 190 pp. Tall-8vo. Original cloth.

Budapest, 1976. 85.–

FIRST EDITION. A well preserved copy.

Pfaff's Minerals

191 PFAFF, FRIEDRICH. Grundriss der mathematischen Verhältnisse der Krystalle. Illustrated by 16 lithographic folding-out plates. XXIV, 367 (+ 1) pp. 8vo. Contemporary cloth, gilt lettering on spine.

Nördlingen, C. H. Beck, 1853. 485.–

FIRST EDITION of this fundamental treatise in crystallography. A well preserved copy, library stamp on titlepage.

Friedrich Pfaff (1825–1886) from a rather scholarly family in which grandfather, father and brothers have been scientists, doctors etc., coincidently taught mathematics at the University of Erlangen, coincidentally Erlangen because it is Siemenstown so to speak, Siemens computers, crystals . . .

Johann Thaddäus Anton Peithners
Edlen von Lichtenfels,
würklichen kaiserl. königl. Hofraths, und Referendarii bey der k.
auch k.k. Hofkammer- in Münz- und Bergwesen.

Versuch
über die
natürliche und politische Geschichte
der
böhmischen und mährischen
Bergwerke.

Wien,
gedruckt bey Matthias Andreas Schmidt Universitäts Buchdruckern.
1780.

Pfaff later turned to geology and occupied the chair of geology at Erlangen University. He was a prolific author on geological topics with a number of books to his credit not only in crystallography but also on glaciology e. a.

As a matter of publishing history, this volume is one of the earlier productions of the famous and still thriving C. H. Beck'sche Verlagsbuchhandlung published at their foundation address in Nördlingen and before they went to München where they still are.

Poggendorff V, 1151; Zittel, Geschichte der Geologie, sev. cit.

Planck's First Book

192 PLANCK, MAX. Das Princip der Erhaltung der Energie. Von der Philosophischen Facultät Göttingen preisgekrönt. 1 leaf publ. ads., XII pp., 1 leaf „Inhalt", verso blank, 247 pp., 1 blank page. Large 8vo. Original yellow printed wrappers.

Leipzig, B. G. Teubner, 1887. 2200.–

FIRST EDITION OF MAX PLANCK'S FIRST PUBLISHED BOOK AND MAJOR WORK.

This important work, prize winning essay at the University of Göttingen, is divided into three parts: I. Historical – II. Formulation of the Principle – III. Descriptions of the various kinds of Energy.

The subject of this book had already dominated his annotations in 1878 while he was studying at Berlin under Kirchhoff and Helmholtz. Considerations of energetics together with another principle were to become decisive for Planck's mathematical treatment of radiation phenomena *(see our Max Planck Catalogue 258, item nos. 28 ff.)*.

Akad. No. 7; Hans Kangro, Vorgeschichte des Planckschen Strahlungsgesetzes, SS. 122.

193 PLANCK, MAX. Vorlesungen über Thermodynamik. With 5 illustrations in the text. 2, VI, 2, 248 pp. 8vo. Original cloth with lettering and decorations.

Leipzig, Veit, 1897. 850.–

FIRST EDITION in a fine uncut copy of one of the MAJOR WORKS on thermodynamics. Also, the volume is the FIRST COLLECTIVE EDITION of Planck's twenty papers on the subject which he had published between 1879 (his thesis) and 1896; most of those papers had appeared in scientific journals. At the end of the present volume, Planck gives a bibliography of them. This classical work of modern physics went through numerous editions, the ninth German edition appeared in 1930. English and French translations were published between 1903, 1913 and 1927. A Russian edition appeared in 1927. – A rare item!
Akademie No. 31.

Planck's Last Steps Towards Quantum Theory

194 PLANCK, MAX. Über irreversible Strahlungsvorgänge. I.–V. Mittheilung & Nachtrag (First to Fifth Communication and supplement). 6 volumes. 12; 3; 24; 28; 41; 12 pp. 4to. Original orange printed wrappers, cloth folder.

Berlin, 11th February 1897 to 23rd May 1901. 1700.–

FIRST EDITIONS of this very rare ensemble of all five communications plus the supplement in the VERY RARE AUTHOR'S OFF-PRINT FORM, with new pagination (no. 2 in periodical issue). With the Kirchhoff-Wien-Boltzmann work as a background, Max Planck began his attack on the black-body problem in 1897. He labored under the erroneous impression for some time that Wien's formula was the only one which harmonized with the second law of thermodynamics. The experiments on black-bodies due to Lummer and Pringsheim, Rubens and Kurlbaum forced him from that position; these researches are taken into account in the present series and are duly acknowledged *(see item no.)*. „I had already been struggling with the problem of the equilibrium of matter and radiation for some years without success; I knew that the problem is of fundamental significance for Physics; I knew the formula that reproduces the energy distribution in the normal spectrum; a theoretical interpretation had to be found at any cost, no matter how high". On December 14, 1900, Planck delivered a paper entitled „On the theory of the energy Distribution Law in the Normal spectrum" before the German Physical Society, AND THE QUANTUM THEORY WAS BORN.

Cajori, History of Physics, p. 312 ff.; Cropper, Quantum Physicists, p. 10 ff.; Akademie Nos. 33, 34, 35, 38, 39, 50; Kangro, Vorgeschichte des Planckschen Strahlungsgesetzes, 1970.

REKURSIVE FUNKTIONEN IN DER KOMPUTER-THEORIE

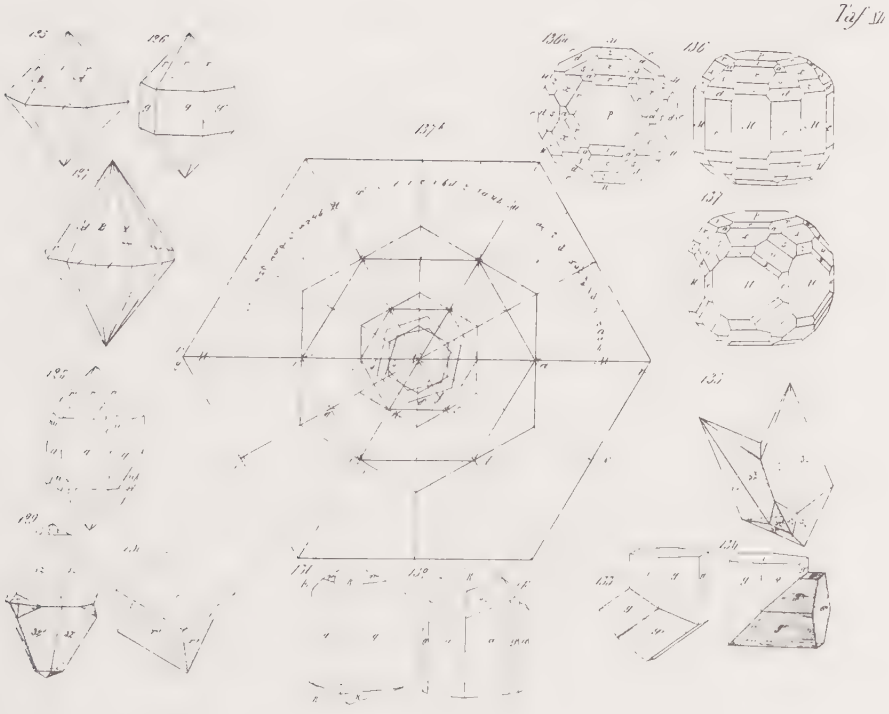
von

RÓZSA PÉTER

Eötvös-Loránd-Universität, Budapest

AKADÉMIAI KIADÓ, BUDAPEST 1976

– No. 190 –



– No. 191 –

195 PLANCK, MAX. Über eine Verbesserung der Wien'schen Spectralgleichung. Vorgetragen in der Sitzung vom 19. Oktober 1900. pp. 202–204. In: Verhandlungen der Deutschen Physikalischen Gesellschaft II. 8vo. Contemporary half cloth, marbled sides. – Leipzig, 1900.

Bound with:

PLANCK, MAX. Ein vermeintlicher Widerspruch des magneto-optischen Faradayeffectes mit der Thermodynamik. Same volume, pp. 206–210.

And with:

PLANCK, MAX. Zur Theorie des Gesetzes der Energieverteilung im Normalspektrum. Same volume, pp. 237–245.

Leipzig, 1900.

Added are:

PLANCK, MAX. Über das Gesetz der Energieverteilung im Normalspectrum; In anderer Form mitgeteilt in der Deutschen Physik. Gesellschaft. 11 pp. In: Annalen der Physik, volume 4, 8vo. In protective cloth case.

Leipzig 1901.

and which is bound with:

PLANCK, MAX. Über die Elementarquanta der Materie und der Elektrizität. 3 pp. the same volume.

Leipzig, 1901. 4950.–

FIRST EDITIONS OF ALL PAPERS; *„The Celebrated Announcement of the Quantum Theory from which Planck's Radiation Law was derived, based on the Assumption that Energy is emitted and absorbed in Discrete Quanta".* (Horblit)

A most desirable copy uniting all the important papers which had appeared shortly before and after the announcement of the quantum Theory in „On the theory of the Energy Distribution Law of the Normal Spectrum". The volume of the „Verhandlungen . . ." contains also the famous papers by *O. Lummer and E. Pringsheim* „On the Radiation of the Black Body for long Waves" (pp. 163–180) as well as *F. Kurlbaum's and H. Ruben's* notice „On the Emission of long Waves by the Black Body".

In his earlier studies Planck was much impressed for some time that Wien's formula was the only one which harmonized with the second law of thermodynamics. The experiments on „black bodies" due to Otto Lummer and Ernst Pringsheim in the Physikalisch-Technische Reichsanstalt in Berlin-Charlottenburg, H. Rubens and F. Kurlbaum forced him from that position. The results of these experiments were known to Planck a few days before they were read before the German Physical Society and he prepared a discussion in which he suggested a new radiation formula „Über eine Verbesserung der Wienschen Spectralgleichung". This small paper shows methodically all signs of the forthcoming revolutionary theory. Planck had found his formula in a half empiric way, due to his uncomparable thermodynamic delicacy. He regarded it himself as a „happily guessed interpolation formula". And then he started to find the theoretic foundation thereof.

In his „The Law of distribution of Energy in the Normal Spectrum", Planck explained that energy flowed not in continuous, indefinitely divisible currents, but in pulses or bursts of action. Planck therewith gave the world of atomic physics a unit of energy in a system showing a natural frequency in definite quanta and proposed a constant of angular momentum as a unit having. 6.62 x 10-27 erg seconds; this value was named *„Planck's Constant".*

Here was a *Revolutionary theory.* It contradicted the mechanics of Newton and the electromagnetics of Faraday and Maxwell. Moreover it challenged the notions of the continuity of nature. The *Quantum Theory had Affected Virtually every Branch of Physics.* Its earliest and one of the most significant developments was Einstein's application of the theory to what is known as the „photo-electric effect".

Horblit, One Hundred Books famous in Science no. 26a; Dibner, Heralds of Science, no. 166; Printing and the Mind of Man no. 391; Cajori, History of Physics, pp. 311 ff.; Herrneck, Bahnbrecher des Atomzeitalters pp. 140 ff.; Akademie, nos. 44, 45, 47, 48, 49.

Zur Theorie des Gesetzes der Energieverteilung im Normalspectrum;
von M. Planck.

(Vorgetragen in der Sitzung vom 14. December 1900.)

(Vgl. oben S. 235.)

M. H.! Als ich vor mehreren Wochen die Ehre hatte, Ihre Aufmerksamkeit auf eine neue Formel zu lenken, welche mir geeignet schien, das Gesetz der Verteilung der strahlenden Energie auf alle Gebiete des Normalspectrums auszudrücken [1]), gründete sich meine Ansicht von der Brauchbarkeit der Formel, wie ich schon damals ausführte, nicht allein auf die anscheinend gute Uebereinstimmung der wenigen Zahlen, die ich Ihnen damals mitteilen konnte, mit den bisherigen Messungsresultaten [2]), sondern hauptsächlich auf den einfachen Bau der Formel und insbesondere darauf, dass dieselbe für die Abhängigkeit der Entropie eines bestrahlten monochromatisch schwingenden Resonators von seiner Schwingungsenergie einen sehr einfachen logarithmischen Ausdruck ergiebt, welcher die Möglichkeit einer allgemeinen Deutung jedenfalls eher zu versprechen schien, als jede andere bisher in Vorschlag gebrachte Formel, abgesehen von der Wien'schen, die aber durch die Thatsachen nicht bestätigt wird.

Entropie bedingt Unordnung, und diese Unordnung glaubte ich erblicken zu müssen in der Unregelmässigkeit, mit der auch im vollkommen stationären Strahlungsfelde die Schwingungen des Resonators ihre Amplitude und ihre Phase wechseln, sofern man Zeitepochen betrachtet, die gross sind gegen die Zeit einer Schwingung, aber klein gegen die Zeit einer Messung. Die constante Energie des stationär schwingenden Resonators

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1) M. Planck, Verhandl. der Deutschen Physikal. Gesellsch. 2. p. 202. 1900.

2) Inzwischen haben die Herren H. Rubens und F. Kurlbaum (Sitzungsber. d. k. Akad. d. Wissensch. zu Berlin vom 25. October 1900, p. 929) für sehr lange Wellen eine directe Bestätigung gegeben.

196 PLÜCKER, JULIUS. Über die Constitution der elektrischen Spectra der verschiedenen Gase und Dämpfe. Illustrated with two folding plates. In: Annalen der Physik, volume 107, no. 8, pp. 497–539. 8vo. Protective cloth folder.

Leipzig, 1859. 850.–

FIRST EDITION of this important paper describing the FIRST OBSERVATION of cathode rays. The research work done by Julius Plücker (1801–1868) and subsequently by William Crookes *see item no. 47)* and J. J. Thomson *(see 247 ff.)* on the cathode ray established a number of its properties. These discoveries were among the most important of the second half of the 1800s and led directly to Roentgen's great discovery and our entry into the atomic age.

While Faraday's ‚Researches' led quite naturally to the theory of electrolytes, the study of the conductivity of gases may be said to have sparked off a revolution in physics. It was not until Julius Plücker, of Bonn, discovered what he called ‚the beautiful and mysterious green glow' (cathode rays) produced by discharges in tubes exhausted by means of Geissler's mercurial pumps. Plücker further observed that the glow can be deflected by a magnet. Included in the present item are Plücker's papers mentioned in the caption of the present title, i. e. *„Über die Einwirkung des Magneten auf die elektrischen Entladungen in verdünnten Gasen"*, 6 parts, illustrated with plates, all from: Annalen der Physik, volumes 103–107, 1858–1859.

Cajori, History of Physics, p. 269; Dibner, New Rays of Professdor Roentgen, p. 9 ff.; Printing and the Mind of Man, No. 380; Taton, History of Science in the XIXth Century, p. 228.

B. G. TEUBNERS SAMMLUNG VON LEHRBÜCHERN
AUF DEM GEBIETE DER
MATHEMATISCHEN WISSENSCHAFTEN
MIT EINSCHLUSS IHRER ANWENDUNGEN
BAND XIX

LEHRBUCH DER KRISTALLOPTIK

VON

DR F. POCKELS
AO. PROFESSOR FÜR PHYSIK AN DER UNIVERSITÄT HEIDELBERG

MIT 168 FIGUREN IM TEXT UND 6 DOPPELTAFELN

LEIPZIG UND BERLIN
DRUCK UND VERLAG VON B. G. TEUBNER
1906

197 POCKELS, FRIEDRICH. Lehrbuch der Kristalloptik. Mit 168 figures im Text und 6 Doppeltafeln. X, 519 (+ 1) pp. Tall-8vo. Original green publisher's cloth.

Leipzig & Berlin, Teubner, 1906. 325.–

FIRST EDITION in a fine, fresh copy. Beautifully illustrated by large foldingout photographic plats and numerous text-figures.

Friedrich Carl Alwin Pockels (1865–19?) professor of theoretical physics at Heidelberg, writes in the preface: „fehlt z. Zt. eine eingehende Darlegung des gegenwärtigen Wissens auf dem Gebiet der Optik vom physikalischen Standpunkte mit Berücksichtigung der Beobachtungsresultate und mineralogischen Anwendungen . . ." Published in the series „Sammlung von Lehrbüchern auf dem Gebiete der mathemat. Wissenschaften, XIX".

Poggendorff V, 1175.

Pioneer of Solid State Physics

POHL, ROBERT RICHARD. Über das Leuchten bei Ionisationen, 1905. Author's own copy. PLEASE SEE No. 66: Pohl's own complete set of Einstein's 1905 Papers.

First Extensive History of Electrical Discovery
Classical Work in 18th Century Physics

198 PRIESTLEY, JOSEPH. Histoire de l'électricité, traduit de l'Anglois . . . avec des notes critiques. Ouvrage enrichi de firures en taille-douce. With 9 engraved plates, folding out. 3 volumes. XLVI, 2, 432 pp.; 531, 1 pp.; 4, 474 pp., 2 leaves „approbation". Large 12mo. contemporary full brown calf, richly gilt decorated spines with red lettering labels.

Paris, Herissant, 1771. 1100.–

FIRST EDITION of the only translation of Priestley's work into French. A rather good set, well preserved; bindings a little rubbed at the corners but still sound and firm.

Joseph Priestley (1733–1804) conceived the HISTORY AND PRESENT STATE OF ELECTRICITY as a methodized account of previous discoveries and a assessment of contemporary electrical studies, to encourage further work on the subject. As a chronicle of near-contemporary electrical researches, lucidly and simply described, it was very successful. During the author's lifetime the work went through five English editions and was translated into Dutch, French, and German.

The success of the work involved Priestley in a scientific career in which his original experiments had, initially, little place. Almost at once he commenced an international correspondence with scienists such as Bergmann and Volta. Many of whom supplied Priestley with books and references and gave him hints for experiments, which he initially performed to verify or elucidate the work of others. From these experiments he was soon drawn into orginal investigations, which he described and included in this and successive editions of his famous HISTORY OF ELECTRICITY. Priestley discovered the conductivities of charcoal and of metalic salts, ranged the metals in a table of comparative conductivities, first noted the distinctive marks left by spark dischaiges on metallic surfaces – now known as „Priestley's Rings". His most remarkable electrical discovery came as an interpretation of an experiment by *Franklin (see item no. 77).* From the observation that pith balls lowered within an electrified metallic cup were not influenced by electricity, Priestley deduced, on Newtonien grounds, the inverse-square form of the force law between electrical charges. The publication of this deduction in the present work passed nearly unnoticed, but it probably inspired Cavendish's subsequent experimental determination of the force law.

The translation into French was executed by the originally natural historian Mathurin-Jacques Brisson (1723–1806) who later became professor of physics at Navarre to continue his scientific career on the *Metrication Boards of France.*

Crook 506; DSB XI, 141 ff.; Wheeler-Gift 453 b.

Early Victim of Electrical Experiments
Signed Copy

199 RABIQUEAU, CHARLES. Le spectacle du feu élémentaire, ou cours d'électricité expérimentale. Illustrated by 115 nice engravings on 10 large folding-out plates. 1 unn. leaf, folding-leaf „avis", 296 pp. 8vo. Contemporary calf, richly gilt decorated spine with lettering label.

Paris, Jombert, Knapen, Duchesne, 1753.

And bound with:

(RABIQUEAU, CHARLES). Lettre éléctrique sur la mort de M. Richmann. 1 unn. leaf, 14 pp.

No place, no date (= Paris, 1753).

And bound with:

RABIQUEAU, CHARLES. Rélation curieuse et interessante pour les progrès de la physique et de la médecine. 30 (first two blank) pp., final blank leaf.

No place, no date (= Paris, 1756). 1400.–

FIRST EDTION in a well preserved and very fresh copy, complete with all the plates and the folding-out leaf „Avis" with the author's *manuscript* „fautes à corriger". Author's signature at the end of the preface.

Charles Rabiqueau (?–?), advocat and „ingénieur privilégié du Roi, pour tous ses ouvrages de physique et de méchanique" discusses Franklin's recent work in the preface of the main work in this volume and the Franklin-Nollet polemics in the third of the three titles present in this very volume. The extensive „table des matières" is also a condensed version of the descriptions of the numerous electric experiments described by the author.

Georg W. Richmann (1711–1753) from Sweden, was professor in St. Petersburg and a member of the Imperial Academy there. He had constructed an apparatus for obtaining atmospherical electricity according to Franklin's plans. His forte was accurate measurement for which he had built an electrometer. „It being my business to enquire into nature so far as I am able, and to neglect no occassion not only for observing, but also for measuring the phenomena of natural electricity" he once wrote. It was while bending over to read the electrometer he had fixed to his insulated atmospheric probe that a great white and bluish fire appeared between the rod of the electrometer and his head. At the same time a sort of steam or vapour arose, Richmann had met with instant death – one of the first victims of the relativly young sciene of electricity.

Heilbron, Electricity in the 17th and 18th Centuries, pp. 85/6, 391/2 (erraneous death date); Mottelay, p. 204; Ronalds 418; Wheeler-Gift I, 381 (erran. pagination); no copy in the Schmidt-Collection! – Zeitlinger, First Splt., 3712 (lacking the two additional titles and remarks „rare" (in 1928!)

German Crystal Triumphs Over German Luftwaffe
RADAR

200 RADAR. A REPORT ON SCIENCE AT WAR. Released by the Joint Board on Scientific Information Policy for Office of Scientific Research and Development, etc. Published in the USA by the Government Printing Office. 2, 50 pp. Tall-8vo. Original printed wrappers.

London, HMSO, 1945. 450.–

AND WITH:

HALLOWS, R. W. RADAR. Radiolocation simply explained. Illustrated. 140 pp. 8vo. Original cloth.

London, 1946.

AMONGST THE VERY FIRST PUBLICATIONS on one of the great war time secrets: RADAR, and also one of the very first great and successful applications of crystals in higthech. In the RADAR-development programm the USA invested even more money than into the A-bomb development at Los Alamos $ 2.5 billion versus $ 2 billion).

On a rather sunny day in September 1940 a neglected element disovered in imperial Germany by the famous chemist Clemens Winkler back in 1886 *(please see item no. 275)* helped to win the battle over England. On this day, 185 of the best Luftwaffen fighterplanes were spotted by one of the first successfully applied semi-conductors: Germanium in a RADAR device. This day Churchill declared that never in history so many have owed so much to so few, the backbone of the Luftwaffe was broken and a decisive battle was lost resp. won. Many scientists held to the wisdom that „the atomic bomb only ended the war. Radar won it."

Germanium was the first crystal to have been employed in large quantities in early years of microelectronics until it was eventually replaced by the more adequate and versatile silicon as basis of the microchip.

In 1945, with the aid of a wealth of new information about semiconductors gleaned from the RADAR research effort, Bell Labs assembled a meeting of its semiconductor researchers to discuss work on germanium crystals. Ma Bell was about to turn its resources loose in persuit of a solid-state alternative

to the versatile vacuum tube in which the labs had enough practical experience during the past decades. It would take only two years for the effort to bear its first fruit. In 1948 Bardeen, Brattain and Shockley announced the invention of the TRANSISTOR, the harbinger of an entirely new sort of electronics with the capacity to change culture. – Please see no. 12

Hanson, The New Alchemists, pp. 71 ff.; Queisser, Kristallene Krisen, pp. 81 ff.

With the Large Engraved Map

201 RAZOUMOVSKY, GREGOR DE. Voyages minéralogiques dans le gouvernement d'Aigle, et une partie du Vallais. Suivis de la relation d'une excursion sur le Lac de Lucerne, ou Lac des Quatre Cantons. With the large engraved folding-out map and an engraved plate. IV, 183, 2 pp. 8vo. Half calf.

Lausanne, Mourer, 1784. 1200.–

FIRST EDITION in a well preserved copy, complete with the map which lacks in many other copies.

Count Gregor de Razoumovsky (died 1837) a rich Russian privatier, lived for several years in Switzerland. His inclination to geology let him travel a lot in Switzerland exploring the geological conditions. He recorded his findings in several titles of which I had listed most in the catalogue of the DE BEER HELVETICA COLLECTION 247, item nos. 382 ff.

Poggendorff II, 578–9; Haller I, 1031; Lonchamp 2408; Studer, Phys. Geogr., pp. 520 ff.; Wäber 42; Ward & Carozzi, Geology Emerging, 1848 ff. (not listing our title, however).

Pioneer of the Energy View of Matter

202 REDTENBACHER, JACOB FERDINAND. Das Dynamiden-System. Grundzüge einer mechanischen Physik. With 1 lithographic plate. X, 142 pp. Large 4to. Contemporary boards, cloth spine.

Mannheim, Bassermann, 1857. 1850.–

FIRST EDITION of this extremely rare volume. A well preserved copy.

Jacob Friedrich Redtenbacher (1809–1863) was professor in Zürich and later at the famous Polytechnical School in Karlsruhe.

In the earlier decades of the 19th century the behaviour of a complex of molecules or atoms was often compared with that of a planetary system; but in addition to the forces of attraction, those of repulsion had to be resorted to in order to explain the expansiveness of gases. Heat was then considered to be a material substance, the particles of which repelled each other. The kinetic view of matter was allied with the Cartesian physical philosophy, which was dispelled by Newtonianism in France and by Kant's philosophy in Germany. In consequence, when in Germany A. Krönig published his „Foundations of a Theory of Gases" in 1856, philosophers who had been speculating in the direction of a Newtonian atomism were much taken by surprise. One of the best examples is Redtenbacher's „Dynamiden System" and also Fechner's „Atomenlehre".

The immediate result was to induce R. Clausius, who had been occupied with similar researches since 1850, to publish his celebrated paper „Ueber die Art der Bewegung welche wir Wärme nennen", 1857.

Darmstädter p. 583; Poggendorf II, 584–5; Rosenberger, Geschichte der Physik III, pp. 554 ff.

203 REDISH, K. A. An Introduction to Computational Methods. XII, 212 pp. Large 8vo. Original cloth.

London, 1962. 150.–

FIRST EDITION, second impression. A well preserved copy.

204 REHBOCK, FRITZ. Rechenmaschinen. With 6 illustrations. 5 pp. in: Naturwissenschaften, volume XV, No. 33. 4to. Original printed wrappers.

Berlin, 1927. 350.–

FIRST EDTION of a rare early German paper on automatic adding machines.

Fritz Rehbock (born 1896) was professor of mathematics at the TH Braunschweig. He describes the following machine types and systems: Leibniz, Hamann's Mercedes-Euklid-Maschine, Odhner's system similar to that of the „Trinks-Brunsviga" which was one of the first calculators in series production; Selling's multiplicating machine and finally Otto Steiger's „Millionär" from Zurich.

Poggendorff VIIa, 699.

California's Gold

205 RICHTHOFEN, FERDINAND VON. Die Metall-Produktion Californiens und der angrenzenden Länder. 58 pp. 4to. Original printed wrappers.

Gotha, Perthes, 1864. 325.–

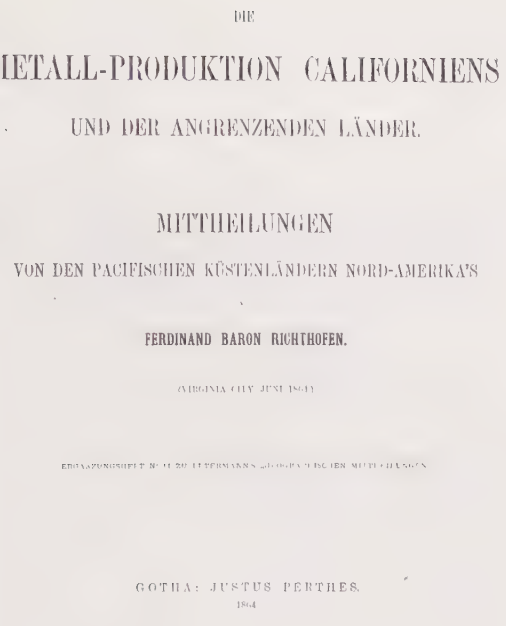
FIRST EDITION. A well preserved copy, printed in double columns.

Ferdinand von Richthofen (1833–1905) was a close friend of Haeckel during their mutual time at Berlin University. In a letter to his parents, Haeckel wrote in 1855:

„... aber einen rechten Freund, der das alles in sich vereinigte, in allen verschiedenen Richtungen, wie verschieden er auch sonst im Temperament ... wäre, wenigstens dieselben Grundansichten und Grundsätze hätte, der geht mir vollständig ab (hier in Würzburg) ... Am meisten glaube ich hierin noch mit dem edlen, vortrefflichen Richthofen zu harmonisieren, dessen Bekanntschaft ich leider diesen Winter in Berlin viel zu sehr vernachlässigt habe . ." (Schmidt, Entwicklungsgeschichte einer Jugend, p. 143)

In 1862, von Richthofen went to California where he stayed for six years, working as a journalist for German papers to which he reported on the mineral wealth and gold strikes (incl. the Comstock Lode). In the Rocky Mountains and the Sierra Nevada he recognized a definite sequence of igneous rocks. From propylite to trachyte and basalts – that was later confirmed by American geologists.

However, Richthofen's chief contributions were to Alpine stratigraphy; the geology and geography of China, geomorphology and geographical methodology.
DSB XI, 438 ff.


DIE

METALL-PRODUKTION CALIFORNIENS

UND DER ANGRENZENDEN LÄNDER.

MITTHEILUNGEN

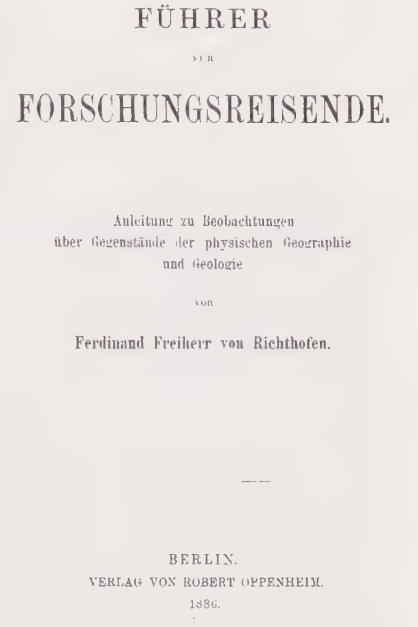
VON DEN PACIFISCHEN KÜSTENLÄNDERN NORD-AMERIKA'S

FERDINAND BARON RICHTHOFEN.

VIRGINIA CITY JUNI 1860.

ERGÄNZUNGSHEFT N° 11 ZU PETERMANNS „GEOGRAPHISCHEN MITTHEILUNGEN.

GOTHA: JUSTUS PERTHES.
1864


FÜHRER

FÜR

FORSCHUNGSREISENDE.

Anleitung zu Beobachtungen
über Gegenstände der physischen Geographie
und Geologie

von

Ferdinand Freiherr von Richthofen.

BERLIN.
VERLAG VON ROBERT OPPENHEIM.
1886.

Foundations of Modern Geomorphology

206 RICHTHOFEN, FERDINAND VON. Führer für Forschungsreisende. Anleitung zur Beobachtung über Gegenstände der physischen Geographie und Geologie. With woodcut illustrations in the text. XII, 745 (+ 1) pp. Tall-8vo. Finely bound in half vellum, red spine lettering label.

Berlin, Oppenheim, 1886. 850.–

FIRST EDITION of this celebrated classical volume in modern geological literature.

The first part of this guide for explorers deals with the techniques of field location and observation. The second part discusses at length the interrelationships of geology and surface forms, with considerable detail given to the physical processes involved. The final part contains accounts of soils, rocks, and mountain structures and classifies the main kinds of landforms (Bodenplastik) according to the process or dominantprocess in their formation. Thus the genetic aspect predominates, and external forms are used as subclassificatory indices only where unavoidable. The text is illustrated by more than 100 small line blocks and in its classification of material and approach was the first truly successful compilation of genetic geomorphology. It immediatly became the standard work in Germany for the systematic treatment of landforms and strongly influenced Penck's „Morphologie der Erdoberfläche".

Geographers as well as geomorphologists rightly acclaim von Richthofen as one of the greatest forces in the modern development of their disciplines.

DSB XI, 140; Zittel, Geologie, 279.

Riemann's Most Important Contribution to Mathematical Physics

207 RIEMANN, GEORG FRIEDRICH BERNHARD. Ueber die Fortpflanzung ebener Luftwellen von endlicher Schwingungsweite. Aus dem achten Bande der Abhandlungen der K. Gesellschaft der Wissenschaften zu Göttingen. 25 (+ 1 blank) pp. 4to. Cloth.

Göttingen, Dieterich, 1860. 1200.–

FIRST EDITION of Riemann's paper present here *in one of the few issued off-prints;* a well preserved copy.

G. F. B. Riemann's (1826–1866) most important contribution to mathematical physics was his 1860 paper on sound waves. Sound waves of infinitesimal amplitude were well-known; Riemann studied those of finite amplitude in the one-dimensional case and under the assumption that the pressure p depended on the density q in a definite way. Riemann's presentation discloses so strong an intuitive motivation that the reader feels inclined to illustrate every step of the mathematical argumentation by a drawing.

Riemann's paper on sound waves is also very important mathematically, giving rise to the general theory of hyperbolic differential equations. Riemann introduced the adjoint equation and translated Green's function from the elliptic to the hyperbolic case, where it is usually called Riemann's function.

DSB XI, 447–456.

CRYSTALS AND THE FINE-STRUCTURE OF MATTER

BY

FRIEDRICH RINNE

PROFESSOR OF MINERALOGY IN THE UNIVERSITY OF LEIPSIC

TRANSLATED BY

WALTER S. STILES

WITH A DRAWING BY A. DÜRER, AND PORTRAITS OF THE LEADING INVESTIGATORS IN THE STUDY OF FINE-STRUCTURE AND 202 FIGURES

METHUEN & CO. LTD.
36 ESSEX STREET W.C.
LONDON

Historical Account

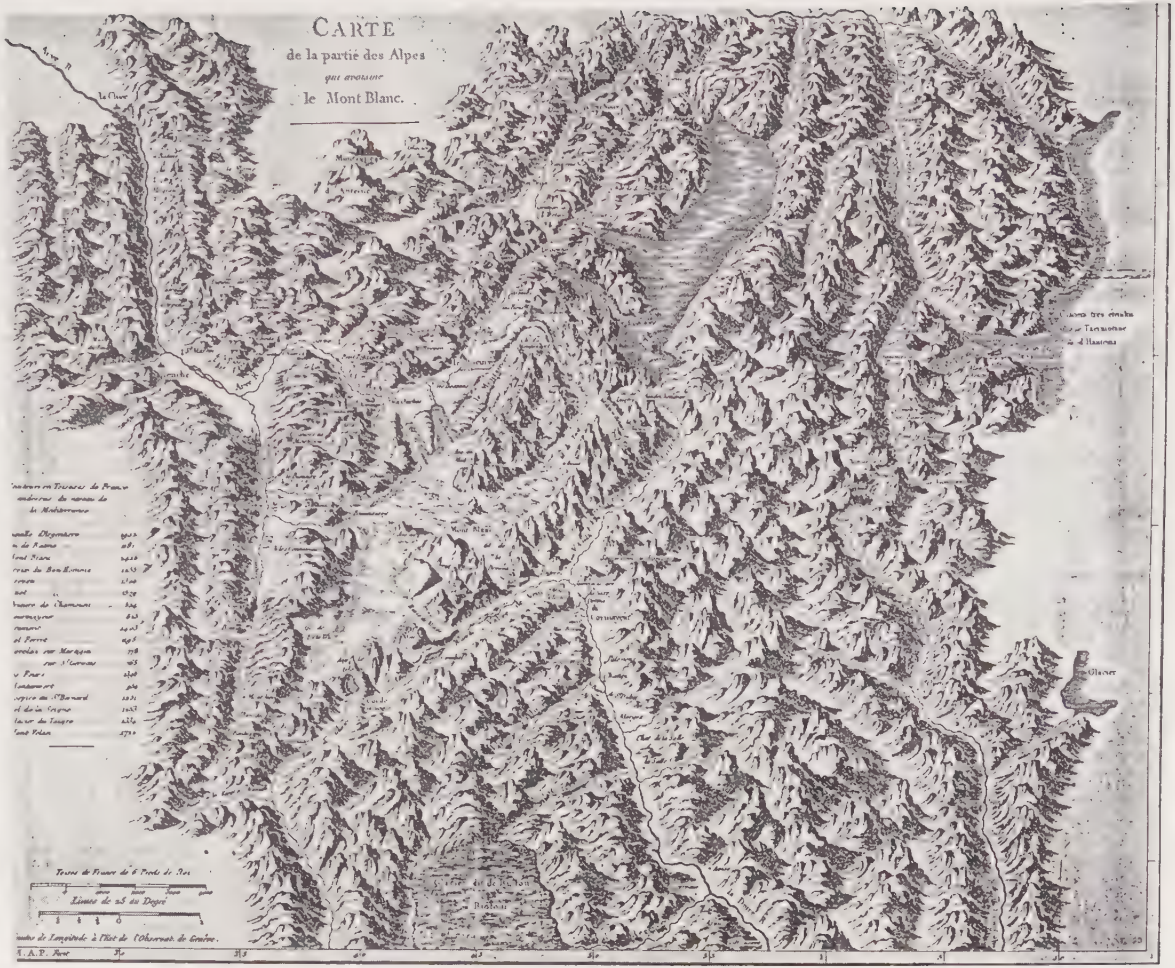
208 RINNE, FRIEDRICH. Crystals and the Fine-Structure of Matter. Translated by Walter S. Stiles. Illustrated by 17 plates. IX (+ 1), 195 (+1), 195 (+1) pp. 8vo. Original green cloth.

London, Methuen, 1924. 250.–

FIRST ENGLISH EDITION printed on heavy paper. A fine and fresh copy.

Friedrich Rinne (1863–1933) was professor of mineralogy and petrography at the University of Leipzig and a scientist of international fame. A shorter version of Rinne's treatise was issued also in English in 1923. The short interval between these two translations – of which the present one is the one to have – illustrates the demand for a publication like this in the early twenties when work in crystallography reached a first peak. Rinne's treatise is also remarkable for its well documented historical introduction illustrated by portraits of the pineers of that science, a. o. von Laue, Debye, Scherrer, the Braggs e. a.

Poggendorff VIIa, 778 ff.


CARTE
de la partie des Alpes
qui avoisine
le Mont Blanc.

209 RÖNTGEN, WILHELM CONRAD. Ueber eine neue Art von Strahlen. Vorläufige (i. e. I.) & II. Mittheilung. OFFPRINTS. 10 pages; 1 blank leaf; 9 (+1) pages. 8vo. Original yellow printed wrappers (for the I.); preserved together in red half marocco case.

Würzburg, Stahel, 1895 & 1896. 11 000.–

FIRST & ORIGINAL EDITIONS The original author's offprints from the „Sitzungsberichte der Würzburger Physik. – Mediz. Gesellschaft".

In 1895, Wilhelm Conrad Roentgen (1845–1923) observed that certain salts fluoresced when placed near a discharge tube covered with black paper, and ascribed the fluorescence to an unkown radiation which he called X-RAYS. In addition he showed that these new rays affected a photographic plate and ionized the air through which they passed. He also showed that they were capable of penetrating relatively thick layers of matter and that their absorption was approximately proportional to the atomic weight of the matter. This property led to his obtaining the FIRST RADIOGRAPHS OF BONES inside a living body (2nd announcement).

Although Roentgen's initial report (Vorläufige Mittheilung) came in during the active holiday season, it was immediately set into print. The publishers of the periodical, the „Stahel'sche K. Hof- und Universitäts Buch- und Kunsthandlung" had a number of separata printed at once and issued in a yellow wrapper, with the date „Ende 1895" (which must have been December 28th to 31st), and it was quickly done, without a separate title-page: just the next (with new pagination) of the paper on ten pages. This first separate edition of Roentgen's paper apparently went OUT OF PRINT IMMEDIATELY, for during the following few weeks before the appearance of the second announcement, the publishers issued the second up to the fifth editions of it. These separata were distributed by Roentgen to his friends and colleagues in Vienna, Berlin, Hamburg and Manchester. Within weeks the full text was translated into English, French and Russian.

A period of ten weeks separated the dates of the paper by Roentgen „On a New Kind of Rays" that was accepted by the Physico-Medical Society of Würzburg on 28th December 1895, and his second communication that appeared on 9th March 1896. During these very strenuous weeks Roentgen pursued new lines of investigation, answered inquiries by his colleagues, extended the design and construction of new apparatus, fended off the demands on him for time to lecture, receive honors and answer interviews.

In this second paper Roentgen reported that he had devised a scale for measuring the intensity of the rays by observing the degree of fluorescence on a screen or the intensity of blackening of a photographic plate. He also observed that electrified bodies in air carrying either a positive or a negative charge would be discharged if exposed to X-Rays. He further announced that, in addition to the X-Ray generating source lying in the surface of glass and in aluminum, he could confidently add that any solid body could be made to generate X-Rays when cathode rays are directed upon it.

In the first year after the great discovery, over 1000 pages appeared on the subject. Roentgen was awarded the FIRST NOBEL PRIZE IN PHYSICS.

Dibner, The New Rays of Professor Roentgen, 1963; Dibner, Heralds of Science, 161; Glasser, Roentgen, 1931; Horblitt, 100 Books Famous in Science, 90; Garrison-Morton 2683; PMM 380; Weil, Some Bibl. Notes on the First Publ. on the Roentgen Rays in: Isis 29, 1938, pp. 362–5.

Towards Relativity Theory

209a RÖNTGEN, WILHELM CONRAD. Ueber die durch Electricität bewirkten Form- und Volumenänderungen von dielectrischen Körpern. With 1 plate. 16 pp. 8vo. Original printed wrappers.

Leipzig, 1880. 425.–

FIRST EDITION; VERY RARE off-print from „Annalen der Physik . . .", volume 11, pp. 771–786. It is the third paper published by Roentgen during his time as profesor of physics at Giessen university 1879–1888. During these years, the most happy in his life as Roentgen said once, he intensified his research of electromagnetic and gas phenomena on pyro- and piezo-electrical properties of crystals and on surface phenomena of liquids. These studies culminated in 1888 in his formulation of the „Roentgen current", a discovery which via Lorentz led directly to the theory of relativity, *and as Max von Laue said, would have made him as famous even without the discovery of the x-rays.*

Glaser, Roentgen, pp. 59 ff.; Dibner, Roentgen, pp. 16; Beier, Roentgegen 1956, No. 18.

EINE NEUE ART

VON

STRAHLEN.

VON

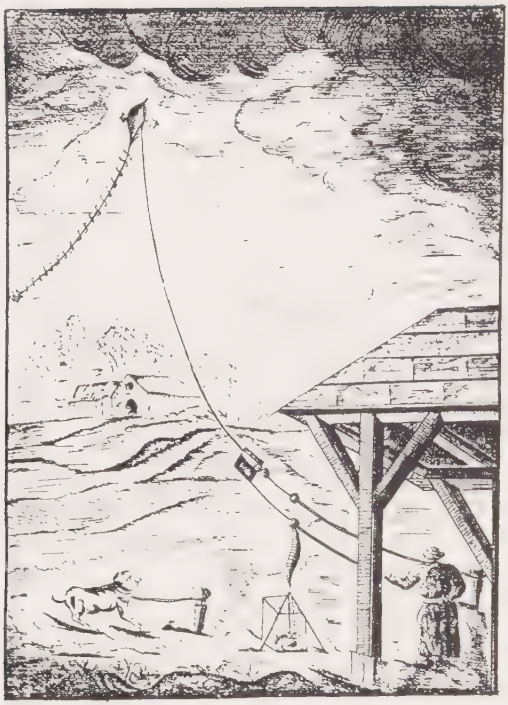
DR. W. RÖNTGEN,

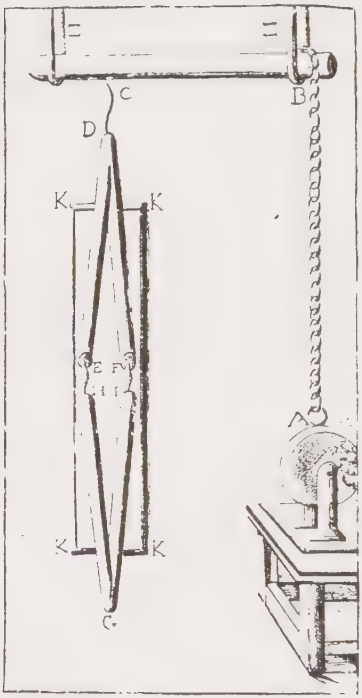
Ö. O. PROFESSOR AN DER K. UNIVERSITÄT WÜRZBURG.

WÜRZBURG.

VERLAG UND DRUCK DER STAHEL'SCHEN K. HOF- UND UNIVERSITÄTS-BUCH- UND KUNSTHANDLUNG.

Ende 1895.





Bleeding Thunderbolts
Franklin – Romas Controversy

210 ROMAS, JACQUES DE. Mémoire, sur les moyens de se garantir de la foudre dans les maisons: suivi d'une lettre sur l'invention du cerf-colant électrique, avec les pièces justificatives de cette même lettre. Illustrated by two engraved plates by Courrège. XXIV, 256 pp., 2 unn. leaves. 8vo. Contemporary boards.

Bordeaux, Bergeret, 1776. 1800.–

FIRST EDITION in a well preserved and fresh copy.

Jacques de Romas (?–1776). A lawyer of Bordeaux, independently of Franklin hit on the electrical kite. He constructed a kite seven feet five inches high and three feet wide, and, having wound fine copper wire around a strong cord through the entire length of about 800 feet, he raised the kite to a height of five hundred and fifty feet on 7th June 1753. Sparks two inches in length were at first drawn by a discharging rod, and, when the kite was afterwards allowed to reach an elavtion of 650 feet, he received many flashes one foot long, three inches wide and three lines diameter, accompagnied by a noice audible at as great a distances as 500 feet. Later the same year he received even better results by elevating his kite to about 1000 feet. Three years later Romas obtained similar results from numerous experiments. He finally apprehended much danger from the raising of the kite and thereafter coiled the string upon a small carriage, which he drew along by means of silken lines as the cord was being unwound.

The researches of De Romas concerning the electricity of isolated metallic bars are embraced in six letters addressed by him to the Bordeaux Academy of Sciences between July 1752, and June 1753. It is reported that they have never been printed and that they are kept, together with other manuscript matter of the same physicist, in the private archives of the institution.

De Romas fiercly defended his independence against Priestley's insinuation (in the History, 1775) that he merely improved upon Franklin's demonstrations. In fact De Romas drew his inspiration from the Bordeaux prize question of 1749 which, in turn, derived from Nollet's speculations.

No copy in the Schmidt-Collection; not listed by Wheeler-Gift; Cohen, Franklin and Newton, pp. 75 ff.; Heilbron, Electricity in the 17th & 18th Centuries, pp. 351; Mottelay 203 ff.; Ronalds 437; cf. Franklin's Autobiography, ed. Lemay & Zall, 1986, p. ö33.

211 RÜTIMEYER, LUDWIG. Ueber Pliocen und Eisperiode auf beiden Seiten der Alpen. 56 pp. 4to. Original printed wrappers.

Basel, 1875. 85.–

FIRST EDITION and published in the program of the „Rectoratsfeier der Universität Basel".

Already in 1869 Rütimeyer had published a significant analyses of Swiss valley and lake origin. To the earlier fluvialist explanations of Hutton and Lyell, he added an actualistic concept of valley development by headward stream erosion.

DSB XII, 38.

Milestone in Geology & Alpinism
200th Anniversary First Ascent of Mont Blanc 1786–1986

212 SAUSSURE, HORACE-BÉNEDICT DE. Voyages dans les Alpes, précédés d'un essay sur l'histoire naturelle des environs de Genève. 8 volumes. Illustrated by 2 large engraved folding maps, 4 folding tables and 20 large engraved folding-out (incl. some smaller) engraved plates by Geissler, Töpfer, Wechselberg and Schellenberg. Tall-8vo. Fine green half morocco bindings with spine lettering labels.

Genève, Barde, Manget & Cie., 1787 (&)
Neuchâtel, Fauche-Borel, 1796. 3800.–

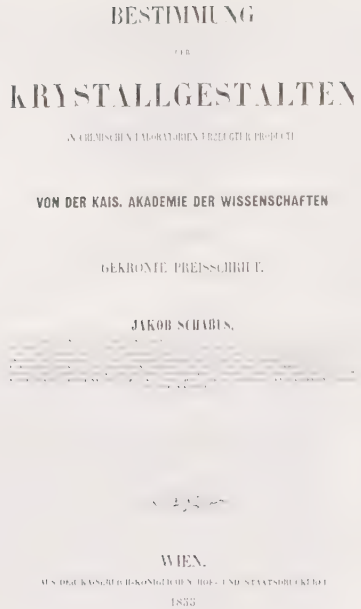
FIRST OCTAVO EDITION published almost simultaneously with the quarto edition. A very fresh and well preserved set in beautiful modern craft bindings.

Horace-Bénedict de Saussure (1740–1799) was educated at the university of Geneva, graduating in 1759, and became professor of physics and philosophy at the Geneva Academy in 1762 spending almost his entire life there until 1786.

He was the first to make a systematic and prolonged study of the alps, his work being published in the now esteemed classic „Voyages dans les alpes". Beginning as a disciple of the great Abraham Werner, he accepted that the mass of the Alps had crystallized from the primitive ocean. However, seventeen years of studying the convolutions and folds of the alps led him to state in 1796 that such folds could only be produced by some force acting from below, or that they must have actually been laid down folded. Both alternatives preclude deposition by water. Saussure was unwilling to decide in favour of the plutonist theories of James Hutton and thus to introduce fire as an agent for he could recognize no sign of it.

Outstanding was his celebrated ascent of Mont Blanc in 1787; and at the summit he took many scientific recordings. This pioneering effort was to open the way to Alpinism as we know of it today. However, can the reader imagine the sufferings these pioneers endured? All of them complained bitterly. They were frostbitten, they were blinded, they were horribly blistered, they could not breath the rarefied air. The early travellers on Mont Blanc had a very vivid impression of the dangers of the mountain. From the start they belived that they were undertaking an expedition of great peril, one in which it required exceptional powers to succeed, and in which it was no discredit to fail.

DSB XII, 119 ff.; Lonchamp 2615; PMM (German ed.) pp. 456 ff.; Studer, Phys. Geogr., pp. 413 ff.; Wolf, History of Science 18th, Vol. II, pp. 302; Wolf, Biographien IV, 252.


BESTIMMUNG

DER

KRYSTALLGESTALTEN

VON DER KAIS. AKADEMIE DER WISSENSCHAFTEN

GEKRÖNTE PREISSCHRIFT.

JAKOB SCHABUS.

WIEN.

1855

Inscribed for Weltzien

213 SCHABUS, JACOB. Bestimmung der Krystallgestalten in chemischen Laboratorien erzeugter Stoffe. Eine von der kais. Akademie der Wissenschaften in Wien gekrönte Preisschrift. Illustrated by 30 lithographed plates. XV (1), 208 pp. 8vo. Contemporary half cloth, green spine lettering label.

Wien, k. k. Hof- und Staatsdruckerei, 1855. 380.–

FIRST EDITION in a fresh and well preserved copy, complete with all the plates. On the bound-in original printed frontwrapper we find the inscription „Herrn Dr. C. Weltzien Professor an der polytechnischen Schule in Carlsruhe hochachtungsvoll der Verfasser." Carl Weltzien (1813–1870) originally studied medicine, got enchanted by chemistry and became professor of chemistry at the famous polytechnical university at Karlsruhe (Partington IV, 488; Poggendorff III, 1431).

The author himself, Jacob Schabus (1825–1867), was a tragic figure in the history of 19th century sciences. A brilliant and inquisitive mind, he published a treatise of physics which went through numerous editions and even translations into the Italian. He was a member of a number of learned societies and published in their publications. He turned psychopathic and took poison at the young age of only fortytwo.

Poggendorff III, 1177.

First Systematic Account

214 SCHEUCHZER, JOHANN JACOB. Herbarium Diluvianum. Editio novissima, duplo auctior. Illustrated by a fine engraved frontispiece-portrait, engraved title with a vignette as well as 14 fine fullpage sized engraved plates. VIII, 119, 5 pp. Folio. Contemporary, possibly even the original publisher's boards.

Leyden, Peter van der Aar, 1723. 2350.–

„Scheuchzer's masterpiece, in which he gives for the *first time a systematic representation* of petrifactions and thereby establishes the most important branch of palaeontology: the palaeo-botany" (Fueter).

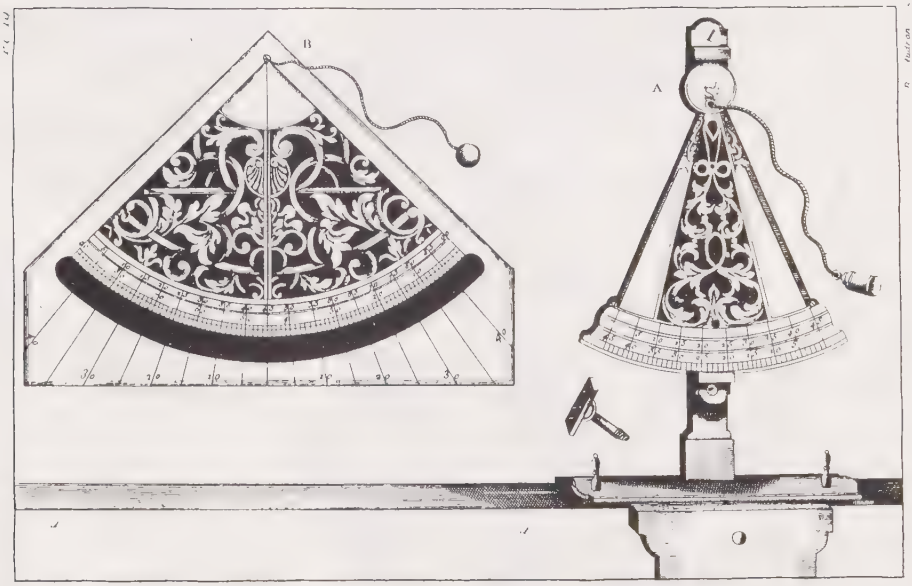
Illustrissimo Isaaco Newton, Equiti Aurato, Societatis Regiæ Anglicæ Præsidi.

This is the important second edition, containing 14 plates instead of only 10 as in the first one of 1709 and an Appendix, published here for the first time, in which Scheuchzer attempts a classification of fossil plants according to Tournefort.

Each of the 14 splendid plates, giving together exact reproductions of more than one hundred fossils, is dedicated to a different contemporary scientist, among them Isaac Newton, Hermann Boerhaave, etc.

Bruised at top of spine, otherwise a fine and clean copy.

Steiger 88; Zitte, Geschichte der Geologie, p. 24 ff.



Most Important Treatise on Mining in 18th Century

215 SCHLÜTER, CHRISTOPH ANDREAS. De la Fontes de Mines, des Fonderies, etc. Traduit de l'Allemand ... Le tout augmenté de plusieurs procédés & observations; & publié par M. Hellot. 2 volumes. With the fine engraved frontispiece, title-pages printed in red and black. Illustrated by 58 large engraved folding-out plates. XXX, 2, 424 pp.; XVI, 661 (+ 3) pp. 4to. Modern half calf.

Paris, Pissot & Herissant, 1750–1753. 2800.–

FIRST FRENCH EDITION of the most important treatise on mining and metallurgy in the entire 18th century rated by the Hoovers as one of the most important in the Agricola, Ercker, Löhneyss tradition. The accounts of separating silver from copper and from gold were considered especially admirable. The original German edition was published in Braunschweig, 1738, and belongs today to the great rarities of mining literature. The French edition was sold out in a few years time and a second edition was issued in 1764.

Christoph Andreas Schlüter's biographical data are not available; the unfortunate chap's year of birth and passing away have not been recorded although he had compiled such an important volume. Schlüter was an official in British pay in Braunschweig and he dedicated his book to king George II. of Great Britain who was a Hannoveranian. Schlüter describes not only German mines, but also those of England, Scotland, Scandinavia, and South-Eastern Europe. The many fine engraved plates with their hundreds of illustrations show not only mining tools, but machinery, technical and mathematical instruments, smelting furnaces, etc. etc.

Darmstaedter, Berg- und Probierbücher, 105 („eines der schönsten Werke über Hüttenkunde und Probirkunst"); Ferchl 480; Gmelin III, 56, i; Duveen 534 ff.; Hoover 724; Honeyman 2793/4 (only the later editions); Ward & Carozzi, Geology Emerging, 1977 (only imperfect copy).

216 SCHMIDT, J. C. L. Theorie der Verschiebungen älterer Gänge mit Anwendung auf den Bergbau. Ein Beitrag zur allgemeinen Gangtheorie. With engraved title-vignette and with 3 engraved folding plates. XVI, 118 pp. 8vo. Original wrappers.
Frankfurt, 1810. 780.–

FIRST EDITION in an entirely uncut and well preserved copy. Johannes Christian Leberecht Schmidt (1778–1830) was a trained geologist and mining specialist. As Bergrat and managing director of the Stumm foundry in Saarbrücken (the company still exists today) he did a great deal to develop that company. He later went to Siegen and he died in Mexico.

Schmid, Goethe und die Naturwissenschaften, page 572. Not in the Hoover Collection.

Die Phototelegraphie

und das

Elektrische Fernsehen

mit einer Figurentafel

von

Major Benedict Schöffler,

k. u. k. im k. u. k. Corps-Artillerie-Regimente Luitpold Prinz-Regent von Bayern Nr. 10, Lehrer der Ballistik am höheren Artillerie-Curse

WIEN UND LEIPZIG

WILHELM BRAUMÜLLER

K. U. K. HOF- UND UNIVERSITÄTS-BUCHHÄNDLER

1898

Pioneering Pre 1900 Work on Television

217 SCHÖFFLER, BENEDICT. Die Photographie und das Elektrische Fernsehen. Mit einer Figurentafel und dem Frontispiece. 27, 1 (blank) pages. 8vo. Original grey printed wrappers.
Wien und Leipzig, 1898. 645.–

FIRST EDITION in a fine and entirely uncut and unopened copy.

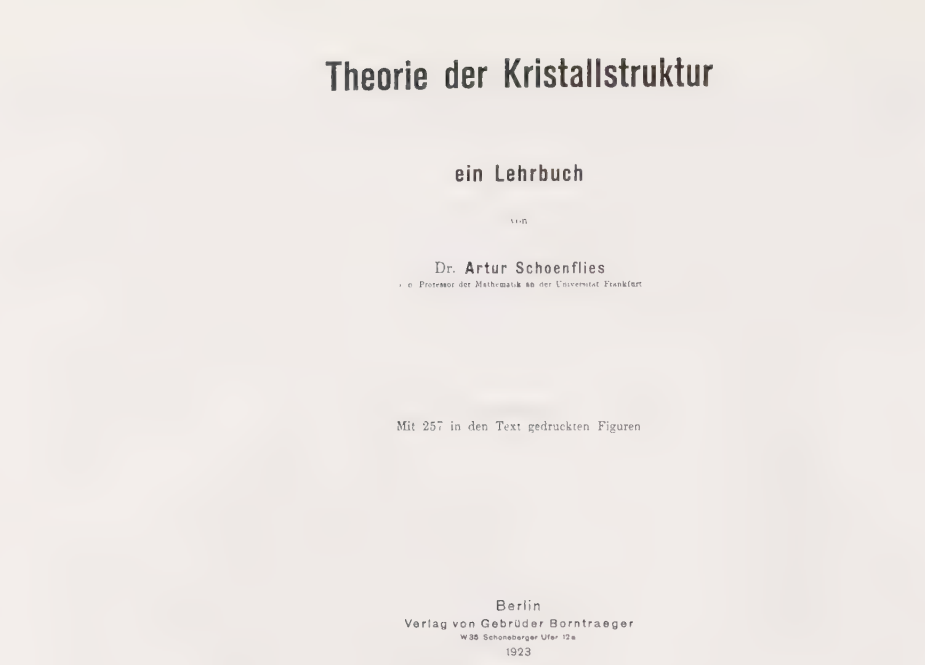
The author, Benedict Schöffler, was ballistics instructor at the imperial school of artillery at Vienna. Schöffler had experimented with electrical photo-telegraphy for some time and had patented his apparatus as early as December 1896 in England. His pioneering work on electric television is based on

1. Das Prinzip, dass ein Bild zu Zwecken der Uebertragung in eine Reihe von Punkten aufgelöst wird, die in unendlicher Folge auf einer Platte auftreten, welche die Fähigkeit hat, Lichtverschiedenheiten in elektrische Stromverschiedenheiten umzusetzen.

2. der Calcul, welcher die mangelhafte Einrichtung des menschlichen Auges berücksichtigt, welches die den Contouren einer Figur rasch aufeinanderfolgenden Lichtpunkte als die Figur selbst ansieht.

Dann die Ausnützung der Eigenschaft des metallischen Selen: Dass sein elektrisches Leitungsvermögen von dem Grade seiner Beleuchtung abhängt." (Introduction by the author).

It appears that Schöffler's pioneering paper on television was overlooked by the historians of early television.


Theorie der Kristallstruktur

ein Lehrbuch

von

Dr. Artur Schoenflies

o. ö. Professor der Mathematik an der Universität Frankfurt

Mit 257 in den Text gedruckten Figuren

Berlin

Verlag von Gebrüder Borntraeger

W 35 Schöneberger Ufer 12a

1923

A Standard Work on Crystal Structure

218 SCHÖNFLIES, ARTUR! Theorie der Kristallstruktur, ein Lehrbuch. Mit 257 in den Text gedruckten Figuren. XII, 555 (+ 1 blank) pp. Tall-8vo. Original red cloth.

Berlin, Bornträger, 1923. 650.–

FIRST EDITION in a fine and fresh copy.

Artur Moritz Schoenflies (1853–1928) was professor of mathematics in Goettingen, Königsberg and finally Frankfurt. He published a number of important papers on mathematical and especially crystallographic topics. His main achievement, however, is his „Theory of Crystal Structure" of which only this first edition of 1923 was ever published. It is much sought after and hardly ever turns up for sale. „Schoenflies has given in a classical treatise the whole system of space-lattice arrangements." (Ringe, Crystals and the Fine Structure of Matter, p. 11).

Poggendorff V, 1343.

Most Noteworthy Early Encyclopedia of Mathematics

219 SCHOTT SJ, CASPAR. Cursus Mathematicus, sive absoluta omnium mathematicarum disciplinarum encyclopedia, in libros XXVIII. digesta ... Accesserunt in fine Theoreses Mechanicae Novae. Illustrated by the fine engraved frontispiecetitle by A. Fröhlich and by 41 large engraved plates plus many diagrams in the text. 12 unn. leaves, 660 pp., 14 unn. leaves (index of the 28 books), 8 unn. leaves (index of contents), 6 unn. leaves (definitions and propositions in first Six Books of Euclid). Folio. Contemporary vellum, spine skullfully renewed.

Würzburg, Gottfried Schönwetter's Heirs, 1661. 2800.–

FIRST EDITION of one of the most noteworthy of the early encyclopedias of mathematics (Cantor). From the library of Wolfgang Engelbert Graf von Auersperg with his engraved bookplate.

The learned volume by Caspar Schott is divided into 28 parts or books and deals with geometry, algebra, logarithms, astronomy, statics, hydrotechnology, fortification, mechanics, music, optics, astrology and gnomonics.

Although the volume is browned in parts (quite customary of the period's book production), it is nevertheless a sound and well preserved copy.

Bibl. Deutsches Museum München, Libri Rari, 249; de Bakker-Sommervogel VII, 907,6; Poggendorff II, 838; Cantor II, p. 720; DSB XII, 210 ff.

CURSUS
MATHEMATICUS
AD AUG. IUST. SSIMUM IMPERAT. RE
LEOPOLDUM
AUCTORE
P. GASPARE
SCHOTTO

– No. 219 –

Source of the Nil

220 SCHOTT, CASPAR. Anatomia physico-hydrostatica fontium ac fluminum libris VI. Explicata, et figuris aeri incisis. Accedit in fine appendix de vera origine Nili. Illustrated by the engraved frontispiece-title and 14 engraved folding plates. 10 unn. leaves, 433 (+ 1) pp., 7 unn. leaves. 8vo. Contemporary calf.

Würzburg, J. G. Schönwetter, 1663. 1400.–

FIRST EDITION in a well preserved copy of Schott's rarest work – and also one of the most important ones of his compendiums of contemporary knowledge. At the end is an appendix on the sources of the Nile; the engraved folding plates depict Africa and the course of the Nile.

Caspar (or Gaspar) Schott (1608–1666) had studied philosophy in Würzburg under Athanasius Kircher, the great Jesuit scientist and author of many important and highly valued books on a variety of scientific subjects (music, accoustics, optics, electricity, mechanics, geography, natural sciences, etc. etc.). In Rome he collaborated for three years with Kircher on his researches. Schott decided that since Kircher did not have time to publish all that he knew (!) and all the information communicated to him by Jesuits abroad, he himself would do so. While compiling this material, he returned to Germany in the summer of 1655, first to Mainz and then to Würzburg, where he taught mathematics and physics.

In his first great publication, the „Mechanica hydraulico-pneumatica" *(see my catalogue FROM ALCHEMY TO ATOMS, part III, No. 402)*, he added as an appendix a detailed account of Guericke's experiments on vacuums, the earliest published report of this work. This supplement contributed greatly to the success of Schott's work and as a result he became the center of a network of correspondence. If this was international it was a cleaver move for the Jesuits to be kept informed of all new developments thus keeping abreast of their time.

Sotheran-Zeitlinger, Splt. I, 4526 („One of the rarest of Father Schott's writings" [in 1932!]); DSB XII, 210 ff.

Guericke' Magdeburg Hemispheres
First Illustrated

221 SCHOTT, CASPAR. Technica Curiosa sive mirabilia artis, libris XII. comprehensa. Title-page in red and black. Illustrated with engraved frontispiece-title, portrait, coat-of-arms and with 60 (of which 16 are double page sized and are folding out) finely engraved plates. 21 unn. leaves, 1044 pp., 8 leaves. Thick-4to. Fine contemporary smooth vellum.

Nürnberg, J. A. Endter, 1664. 4800.–

FIRST EDITION in a well preserved, fresh and clean copy, complete with the half-title. This famous encyclopedia of technical knowledge is especially important for its description of Otto von Guericke's fundamentally important experiments with the vacuum-pump and the celebrated Magdeburg Hemispheres, illustrated in a fine folding plate. The first 29 chapters of the first book are entirely devoted to the description of Guericke's experiments communicated to Schott in Letters, some of which are published here for the first time. Guericke himself did not publish his famous book before 1672 *(see item no. 126)*.

Other subjects treated are as follows: Boyle's experiments with the air pump; TORICELLI'S and others' experiments with mercury vacua; hydro-pneumatique experiments; mechanical marvels; secret writing; problems in cyclometry; chronometers; perpetual motion; miscellaneous marvels.

The volume also contains one of the EARLIEST ACCOUNTS OF THE DIVING BELL with a fine engraved plate. This work is furthermore an interesting bridge between this new scientific knowledge of the time, and ancient lore, by virute of its section on cabalistic writing and astrology. – A pleasant copy.

Poggendorff II, 838; Wheeler-Gift no. 155 bis; Darmstaedter 133; Wolf, History of Science . . . p. 102; Rosenberger, Geschichte der Physik II, p. 124.

Outstanding Trailblazer of Micro-Electronics

222 SCHOTTKY, WALTER. Abweichungen vom Ohmschen Gesetz in Halbleitern. Vorträge gehalten auf der Deutschen Physiker-Tagung, Kriegsjahr 1940 in Berlin. In: Physikalische Zeitschrift, volume 41, No. 23/24, pp. 570–573. 4to. Original printed wrappers.

Leipzig, Hirzel, 1940. 850.–

FIRST EDTION of a very important paper in the history of semi-conductor research and micro-electronics. Fresh and well preserved copy of this rare issue!

Walter Schottky (1886–1976), although professor of theoretical physics, he spent the greater part of his life in industrial research. Although his doctoral of 1912 under Max Planck was on special relativity, he devoted most of his career to electronics and to solid-state physics. Many effects and devices are named after him. He worked on the emission of electrons from metallic and oxide cathodes and determined how this could be influenced by the application of an electric field. He was one of the pioneers in studying and explaining the properties of semiconductors and he was one of the earliest researchers in 1929 to conceive the idea that a „hole" could carry charge in a semiconductor – he called this a „defect electron". Schottky also contributed to our understanding of the theory of crystal rectifiers and of imperfections in crystals. On Schottky and his important role in the development of micro-electronics please see Queisser's excellent account in „Kristallene Krisen", pp. 77 ff.

223 SCHUMACHER, CHR. FR. Versuch eines Verzeichnisses der in den Dänisch-Nordischen Staaten sich findenden einfachen Mineralien mit Tabellen der einfachen Fossilien nach ihren vorwaltenden Bestandtheilen. VIII, 172 pp. 4to. Contemporary boards.

Copenhagen, Fr. Brummer, 1801. 850.–

FIRST EDITION in a fine and well preserved copy. A very rare volume and one of the first on the subject matter.

One of the Classics of Geology

224 SCILLA, AGOSTINO. De Corporibus Marinis Lapidescentibus quae defossa reperiuntur. Addita Dissertatione Fabii Columnae de Glossopetris. Illustrated by a fine engraved frontispiece and 32 magnificent fullpage engraved plates. 4 unn. leaves, 73 (+ 1 blank) pp., 3 unn. leaves. Small-4to. Contemporary vellum, spine lettering labels, overlapping edges.

Rome, Antonio de Rubeis, 1747. 1500.–

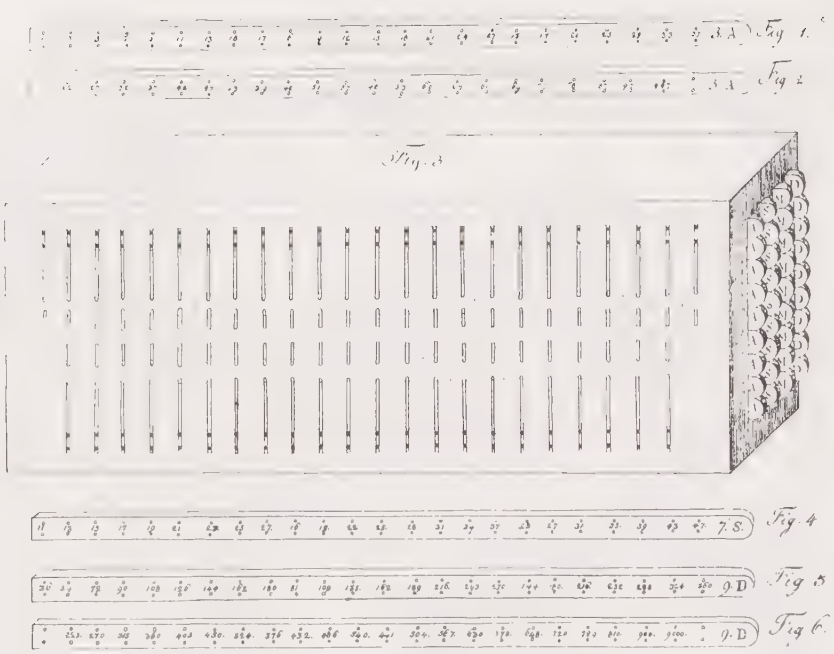
FIRST LATIN EDITION of one of the classic on geology. A well preserved and nicely bound copy.

Antonio Scilla (1629–1700) is one of the best painters of the 17th-century Sicilian school. The failure of the Messina revolt against the Spanish in 1674–1678, in which Scilla had taken part, forced him into exile, first at Turin and then at Rome. He is famous not only as a painter but also as a scholar, a man of culture well versed in science and the humanities. He was a good mathematician, but he is particularly remembered as the author of „La vana speculazione disingannata dal senso" which was first published in 1670.

In the 17th century most scientists still considered fossils to be lusus naturae, sports of nature, born within rocks through the influence of the stars or by other strange means. At hte Accademia dei Lincei, in which the supporters of the new science gathered around Galileo, one of its first members, Francesco Stelluti, persisted in this view. Scilla described with admirable clarity and critical sense his observations on the fossiliferous sedimentary terrains of both shores of the Strait of Messina. He considered animal remains imprisoned in rocks that are now hard but were originally muddy or sandy soil.

DSB XII, 257; Bibl. Fishes. 1747. 1; Nissen, ZBI, 3780; Wood 557.

– No. 224 –



Very First Electrical Calculating Machine

225 SEIFERHEID, GEORG HEINRICH. Sammlung Electrischer Spielwerke für junge Elektriker. Erste – zehnte Lieferung (all published) bound in 5 volumes. Volumes I–V in second, volumes VI-X in first edition. Illustrated by 92 large engraved folding-out plates. 8vo. Contemporary grey marbled boards, uncut edges.

Nürnberg & Altdorf, Monat & Kussler, 1791–1817. 4800.–

MOST REMARKABLE SERIES OF EXPERIMENTS WITH ELECTRICITY AND ELECTRIC MACHINERY INVENTED BY THE AUTHOR. Complete with all ten volumes. There appears to be some bibliographical mystery about this series. Many bibliographers (MNE, Rammensee, Seebass) list only up to eight volumes; most of them have seen only parts of the series. The reason for that is presumably due to the long publishing intervals in which the various volumes came off the press; not too many complete sets may have survived the unstable times than. I presume further that after the fifth volume had appeared, the first five volumes were out of print already and had to be re-issued for the customers of the final volumes in the series. Volume VIII was publihed in 1799, volume IX in 1804 and the concluding tenth volume was not issued before 1817, edited by the author's son Friedrich Seiferheld. He announced an eleventh part to be published shortly; however, I have not found any bibliographical evidence thereof.

This most remarkable series in my opinion has so far been overlooked by historians of science and technology. It contains a vast amount of unexausted early experiments on electric machines and gadgets. I do notseem to find evidence in the available literature to indicate e. g. that Seiferheld apparantly constructed an *ELECTRIC WATCH, ELECTRIC GUNS*, and above all an *ELECTRICALLY OPERATED CALCULATING MACHINE*. So far mechanical calculators where operated by means of levers and cranks. Seiferheld employs electricity to operate his machines of which one is similar to the one invented by Schickard in 1623. Of Schickard's machine no copy is extant. Only recently Freytag-Löringhoff with the help of a master mechanic reconstructed the ingenious instrument from the information in the letters of Schickard to Kepler and a few working models were made.

Another famous calculating machine was constructed by Blaise Pascal in 1643 which formed the prototype for several other to be built in France. In fact, however, the instrument was in some sense not

as advanced as Schickar'd in that it could not do the non-linear operations. Some thirty years later Gottfried W. Leibniz (1646–1716) invented a device now known as the *Leibniz Wheel* and which is still in use in some machines. The mechanism enabled him to construct a machine which surpassed Pascal's in that it could do not only addition and subtraction fully automatically but also multiplication and division. Seiferheld based the second electrically operated calculator described in his book in a chapter on „*Die Rechenmaschine zu allen fünf Species*" apparently on Leibniz's wheel using tinfoil in a way that one gets the impression he uses what is known today as printed circuits.

The motto of Leibniz – to free men from slavery by the automation of dull but simple task-was next taken on by one of the most unusual figures in modern intellectual history, Charles Babbage (1791–1871), the grandfather of the modern computer until you have read this. Back to our author, Georg Heinrich Seiferheld (1757–1818) from Haberschlacht in Württemberg was originally city councellor before he became professor of physics at the Gymnasium at Schwäbisch-Hall. He published a number of books on electrical experiments, a subject very popular at the time.

A well preserved set, some marginal stains here and there do not disturb the overall good appearance of the work. In the last volume two plates are wanting; pages 36/7 are misbound.

Holzmann-Bohatte IV, 374 (lists only some parts of the work); Poggendorff II, 897/8 (the only one stating that there were 10 parts, however, giving the date 1818 for part ten); Rammensee, Nürnberger Kinder- und Jugendbücher, No. 1432 (only parts); Seebass, Kinderbücher, 1686 (lists only 8 parts); MNE II, lists of the second edition only parts one to three); Oppenheimer Coll., NY, cat. 200, Hauswedell & Nolte 1974, 1194 (only parts I–III); Wheeler-Gift, 617 (only parts, 1799); Deutsche Kinderbücher des 18. Jahrhunderts, Wolfenbüttel, L 9, p. 76 (only 4 parts of the second edition); Goldstine, Computer from Pascal to von Neumann pp. 3–10 (did not even hear of Seiferheld!)

Artifical Intelligence
Cornerstone of Micro-Electronics
& Computer Technology

226 SHANNON, CLAUDE ELWOOD.

(1) *A Mathematical Theory of Communication*
In: Bell System Technical Journal, vol. 27, pp. 379–423; 623–656.
New York, July & October 1948.

(2) *The Synthesis of Two-Terminal Switching Circuits*
In: Ibid., vol. 28, pp. 59–98.
New York, January 1949.

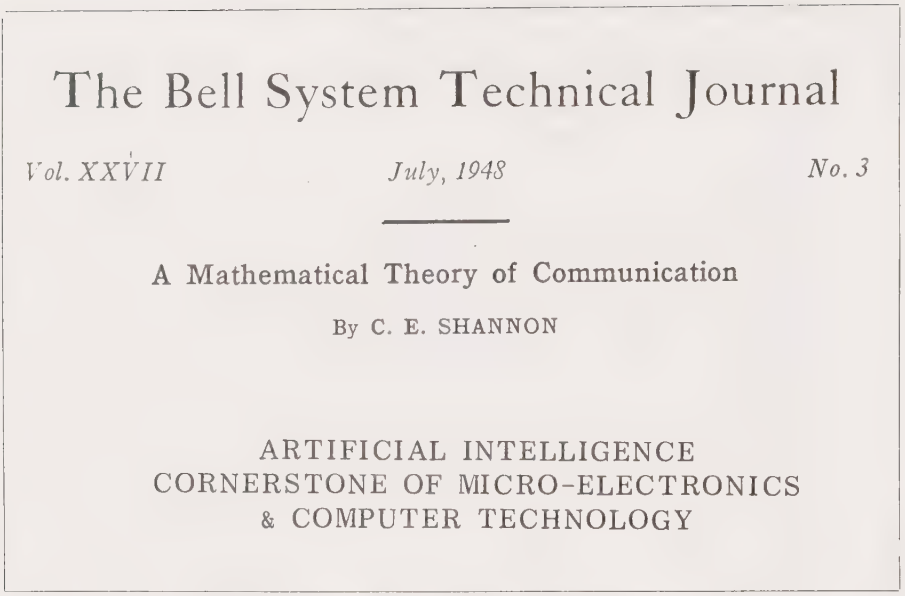
(3) *Communcation Theory of Secrecy Systems*
In: Ibid., vol. 28, pp. 656–715.
New York, October 1949.

(4) *Memory Requirements in a Telephon Exchange*
In: Ibid., vol. 29, pp. 343–349.
New York, July 1950.

(5) *Prediction and Entropy of Printed English*
In: Ibid., vol. 30, pp. 50–64.
New York, January 1951. The Collection: 1200.–

ORIGINAL (&) FIRST EDITIONS of some of the most important papers in the history of micro-electronics, all in the original printed covers.

Claude E. Shannon (1916–) joined the staff of Bell Labs in the war year 1941 where he worked on the problem of most efficiently transmitting information. For a century now, ever since the development of Morse's telegraph, messages in rapidly increasing numbers had been flowing in all directions over wires and cable or through the open air by means of fluctuating electric currents or modulated electromagnetic radiation. A large number of different systems of transmitting these messages were used, and it was important to know which was most efficient and if the efficiency could be increased still


The Bell System Technical Journal
Vol. XXVII July, 1948 No. 3
A Mathematical Theory of Communication
By C. E. SHANNON
ARTIFICIAL INTELLIGENCE
CORNERSTONE OF MICRO-ELECTRONICS
& COMPUTER TECHNOLOGY

Cornerstone of Micro-Electronics

further. – Shannon turned his efforts toward a fundamental understandig of the problem and by 1948 had evolved a method of expressing information in quantitative form... His publication in 1949 showed how this quantitation of information could be analyzed by strict mathematical methods. It was possible to measure the likelihood of information being garbled through loss of bits, distortion of bits, addition of extraneaous bits, and so on. One could speak with precision of such things as redundancy and noise and even entropy. This branch of mathematics is called *information theory*. It has proved useful not only in circuit design, computer design, and communications technology; it is being applied to biology and psychology, to phonetics, and even to semantics and literature.

An additional feature of the present collection is, that in volume 27, pp. 510–588 it contains a paper which is in my oppinion THE VERY FIRST HISTORY OF THE QUARTZ CRYSTAL CLOCK in a time when they were not yet give-aways. The paper incl. a 140-item bibliography on the subject matter!

Shurkin, Engines of the Mind, pp. 291 ff.

Original Photographs & Notes of Nobel Prize Work

226a SIEGBAHN, KARL MANNE. Spektroskopie der Röntgenstrahlen. With 119 illstrations in the text. VI, 257 (+ 1) pp., 4 pp. ads. Tall-8vo. Original printed wrappers.

Berlin, Springer, 1924.

AND WITH:

SIEGBAHN, KARL MANNE. Bilaga till Röntgenspektrosköpiska Precisions-Mälningar. Original-Album with 49 original photographs of x-ray spectra and apparatus. Oblong-large 8vo. Boards.

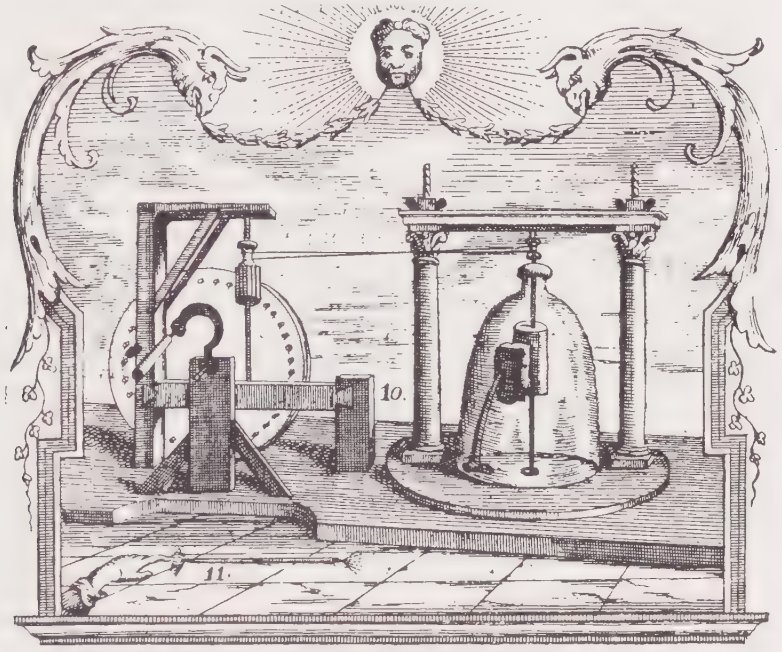
Sweden 1918. 2200.–

FIRST EDITION of the printed textbook and Manne Siegbahn's original photo-album with autographed notes, depicting x-ray spectra and the laboratory apparatus employed by Siegbahn for his researches. The a. m. title is penned on the front wrapper of the album and is signed „Manne Siegbahn 1918".

Karl Manne Siegbahn (1886–1978) as early as 1914 turned his attention to the new science of x-ray spectroscopy founded by Max von Laue and his collaborators in 1911/12. Through successive refinement of his x-ray equipement and technique, Siegbahn was able to achieve a significant increase in the accuracy of his determinations of spectral lines. This allowed him to make corrections to Bragg's equation for x-ray diffraction to allow for the finer details of crystal diffraction. Besides working with crystals, he performed x-ray spectroscopy at longer wavelength using gratings. Here again his accurate measurements revealed discrepancies that were later shown to result from inaccuracies in the value assumed for the electronic charge.

Now professor and head of this physics department at Uppsala, Siegbahn received the Nobel Prize for Physics in 1924 for „his discoveries and research in the field of x-ray spectroscopy". His famous treatise on the subject appeared in an English translation only one year later in 1925.

Weber, Pioneers of Science-Nobel Prize Winners in Physcis, 1980, pp. 73 ff.



227 SIGAUD DE LA FOND (JEAN RENÉ). Précis historique et expérimental des phénomènes électriques, depuis l'origine de cette découerte jusqu'a ce jour. Illustrated with 9 engraved folding plates. 4, XVI, 742, 2 pp. 8vo. Contemporary calf, richly gilt spine.

Paris, (de Cuchet) Rue et Hôtel Serpente, 1781. 2400.–

FIRST EDITION of this comprehensive work on electricity, in which the phenomena and laws of electricity and magnetism are discussed at length; electric and magnetic phenomena are discussed at length; electric and magnetic phenomena compared and the application to the cure of disease is studied. The treatise is also valuable for its historical account. On pages 302 to 364 the author refers extensivly to BENJAMIN FRANKLIN'S work on the subject matter devoting an entire chapter to his work. A well preserved copy of a rare book.

Wheeler-Gift 505 (lists a second edition of 1785 under the publisher's address of Paris, Rue et Hotel Serpente, and giving the name of Demonville as publisher of the first edition; according to the publisher's catalogue bound with the present volume, his name is de Cuchet, rue et hôtel Serpente).

228 SIMMEN, RENÉ. Mens & Machine. Teksten en documenten over Automaten, Androîden en Robots. With numerous illustrations. 6, 110 pp. 4to. Original cloth.

Amsterdam, 1968. 240.–

FIRST DUTCH EDITION published on occassion of the opening of the new IBM-factory in Holland, this volume has become much sought after in any language. It is a chronological arranged history of automata, robots and androîds with a host of charming illustrations.

Inscribed Copies

229 SOMMERFELD, ARNOLD. Theoretisches über die Beugung der Röntgenstrahlen. Vorläufige Mitteilung, Clausthal, November 1899. 7 (+ 1 blank) pp. 4to.

Leipzig, 1899.

FIRST EDITION. Offprint from the „Physikalische Zeitschrift", volume I, pp. 105–111. Author's presentation copy.

AND WITH:

SOMMERFELD, ARNOLD. Theoretisches über die Beugung der Röntgenstrahlen. 86 (+ 1 blank) pp. 8vo. Original printed wrappers.

Leipzig, 1901. 300.–

FIRST EDITION. Offprint from the „Zeitschrift f. Mathematik und Physik" volume 46, pp. 11–97 with *manuscript presentation inscription* by the author on the front-wrapper.

„Sommerfeld reizte es, seine Theorie der Diffraktion an der Beugung von Röntgenstrahlen zu erproben. Seine noch in der Clausthaler Zeit begonnenen Ausführungen erschienen (nach den vorläufigen Mitteilungen in der „Physikalischen Zeitschrift, volume I & II) 1901 im Druck, als er bereits in Aachen weilte. Hier stellte er sich voll hinter die Vorstellung seines Freundes Wiechert: „Röntgenstrahlen bestehen in einer impulsiven . . . Störung des Gleichgewichts des Aethers, welche sich nach den Maxwell'schen Gleichungen zeitlich und räumlich fortpflanzt . . ." Diese Impulstheorie setzte sich auch bei den Anhängern einer Wellentheorie nie ganz durch.

Die Theorie der Röntgenstrahlen erfuhr zunächst keine wesentliche Weiterentwicklung und Sommerfeld beschäftigte sich nicht mehr intensiv damit, legte die Behandlung aber nicht ganz zu den Akten. Seine Auffassung der Röntgenstrahlen als elektromagnetischer Vorgang gab ihm den Anstoss, sich einem anderen Gebiet der Wellenausbreitung zu widmen. Die aufkommende drahtlose Telegrafie fesselte sein Interesse." (Benz)

Inscribed Copy

230 SOMMERFELD, ARNOLD. Zur Elektronentheorie I, II, III. 3 papers. 32; 77 (+ 3 blank) pp.; 35 (+ 1 blank) pp. Large 8vo. Original printed wrappers.

Göttingen, 1904–1905. 380.–

FIRST EDITIONS. Offprints from the „Nachrichten der K. Gesellschaft der Wissenschaften, Math.-phys. Klasse". With Sommerfeld's presentation inscription on the third issue.

In 1903 the council of the Gesellschaft Deutscher Naturforscher und Aerzte invited him to deliver one of the plenary addresses at the Kassel congress. There he pointed to the felicitous collaboration between engineering and mathematics that he had done so much to initiate and that appeared-characteristically, but erroneaously-destined to absorb not merely most of Sommerfeld's future efforts but also much of the attention of phyisicists and mathematicians in general.

At the same time Sommerfeld, with his tremendous capacity for work, continued in mathematical physics and joined the advancing front of fundamental physical research with a series of extensive papers intended to provide a general dynamics of electrons, with special attention to motion faster than the speed of light. In this area his urgent need of discussion to clarify his thoughts could not be satisfied by technical colleagues; instead two bright engineering students, *Peter Debye* and Walter Rogowski, were invited to dinner two or three times a week and afterwards were talked at for two or three hours in Sommerfeld's study.

The last of the electron papers was presented February 25, 1905 – weeks before Einstein's papers appeared in the „Annalen der Physik". Although the electron theory papers of 1904–05 were soon rendered utterly passé by relativity (regaining some interest and currency only after the discovery of Cerenkov radiation), they made Sommerfeld a name among the most advanced theoretical physicists – Boltzmann, Lorentz, Wilhelm Wien. In the summer of 1906 this growing reputation brought a call to the chair of theoretical physics at the University of Munich.

231 SOMMERFELD, ARNOLD. Ueber die Fortpflanzung des Lichtes in dispergierenden Medien. 36 pp., with illustrations. Large 8vo. Original yellow printed wrappers.

Leipzig & Berlin, 1912. 165.–

FIRST EDITION. *Offprint* from the „Festschrift Heinrich Weber...", pp. 338–374.

Presentation Copy

232 SOMMERFELD, ARNOLD & PETER DEBYE. Theorie des lichtelektrischen Effektes vom Standpunkt des Wirkungsquantums. 57 pp. 8vo. Original printed wrappers.

Leipzig, Barth, 1913. 125.–

FIRST EDITION. Offprint from the „Annalen der Physik IV, 41, pp. 873–930". A fine presentation copy.

„Doch von einer Lösung des Quantenrätsels war man noch weit entfernt... Eine mögliche Lösung sah Sommerfeld in seiner h-Hypothese, die er gemeinsam mit Debye auf dem lichtelektrischen Effekt anwandte. Lichtquanten lehnten sie noch beide ab, da sie auf die „vollkommenen" Maxwell'schen Gleichungen nicht verzichten wollten... Im letzten Paragraphen ihrer Arbeit gaben Sommerfeld und Debye unter „kritischen Bemerkungen" ihrem Denkansatz einen neuen Aspekt: „Die Meinung liegt uns ferne, als ob es in Wirklichkeit beim Photoeffekt genau nach unserer Grundhypothese zuginge. Wir möchten diese Hypothese nur ansehen als Ersatz eines Atommodelles..." Ein analytisches Modell des Atoms zu schaffen, das war in diesen Jahren ein Hauptanliegen Sommerfelds." (Benz)

The breakthrough came then in the summer of 1913, with the appearance of *Niels Bohr's first paper on the CONSTITUTION OF ATOMS AND MOLECULES* (DSB XII, 528).

Bohr – Sommerfeld Quantum Theory

233 SOMMERFELD, ARNOLD. Zur Theorie der Balmerschen Serie. Vorgetragen am 4. Dezember 1915 – Die Feinstruktur der Wasserstoff- und der Wasserstoffähnlichen Linien. Vorgetragen am 8. Januar 1916. 75 pp. 8vo. Original green printed wrappers.

München, 1916. 480.–

FIRST EDITION. Offprint from the „Sitzungsberichte der K. Bayer. Akad. d. Wiss., math.-phys. Klasse, 1915."

„Sommerfelds statistische Betrachtungen schlossen sich Max Planck an, die jener schon 1906 entwickelt (see MAX PLANCK CATALOGUE no. 52a) und 1911 beim Solvay-Kongress in den Mittelpunkt seiner Ausführungen gestellt hatte (same catalogue no. 68). Mit Planck stand S. in regem Meinungsaustausch und dessen selbstlose Unterstützung erfüllte ihn mit Dankbarkeit." (Benz).

In the winter semester of 1914–15 he was already lecturing to his students on the astonishing initial results of this investigation: a quantitative theory of the fine structure of the spectral lines of hydrogen and of the x-ray spectra of the heavy elements, regarded as arising from the relativistic increase in mass of an electron by an amount depending upon the eccentricity of its orbit. It was only in the spring of 1916, however, that Sommerfeld found the definitive formulation of his quantization rules yielding a quantum theory of the normal Zeeman effect and, in the hands of his student Paul S. Epstein, of the Stark effect. In the course of this work Sommerfeld entered into (and afterward maintained) very close contact with experimental spectroscopists, especially Friedrich Paschen, with whom he exchanged some fifty letters within six months in 1916.

This extraordinary extension, enrichment, and precision of theory by Sommerfeld contributed decisively to its rapid and widespread acceptance. (DSB)

Hermann, Einstein-Sommerfeld Briefwechsel, pp. 30–37.

Presentation Copy

234 SOMMERFELD, ARNOLD. Zur Quantentheorie der Spektrallinien. 167 (+ 1 blank) pp. 8vo. Original printed wrappers; cloth case.

Leipzig, Barth, 1916. 400.–

FIRST EDITION of the extension of his famous 1915/1916 papers (see the preceeding item).

„Wie man in seiner 1916 erschienenen, zusammenfassenden Abhandlung lesen kann, wusste Sommerfeld die Verdienste Paschens um seine Arbeit wohl zu schätzen: Herrn Kollegen Paschen . . . möchte ich herzlich danken . . .

In eben dieser Abhandlung taucht zum ersten Mal explizit die berühmte dimensionslose Grösse auf, die heute noch als SOMMERFELDSCHE FEINSTRUKTURKONSTANTE bezeichnet wird. In ihr vereinigen sich drei charakteristische Grössen aus drei Bereichen der Physik: das Plancksche Wirkungsquantum, die Lichtgeschwindigkeit und die Elementarladung aus Quanten-, Relativitäts- und Elektronentheorie. In der Formel der Wasserstoffserien regelt diese Konstante alle Feinheiten der Linienaufspaltung. Sommerfeld's Formel beschrieb die Feinstruktur der Wasserstofflinien mit phantastischer Genauigkeit. Es erstaunt, dass die Formel für die Feinstruktur ihre Gültigkeit behielt, selbst als die neuere Quantentheorie die Bahnvorstellungen verstiess, auf die seine Rechnungen aufgebaut waren. Auf die „alte Streitfrage nach der Bedeutung der relativistischen Feinstruktur-Formel" ging Sommerfeld 1929 ein (Atombau und Spektrallinien II), nachdem Paul Diracs Verallgemeinerung der Wellengleichung ein neues Licht auf das alte Problem warf.

Die internationale Fachwelt nahm Sommerfeld's Berechnungen der Spektrallinien spontan und begeistert auf. Der erste unter den zahlreichen Gratulanten war Röntgen . . ." (Benz)

235 SOMMERFELD, ARNOLD, W. V. HOUSTON & C. ECKART. Zur Elektronentheorie der Metalle auf Grund der Fermischen Statistik. 60 pp. 8vo. Original yellow printed covers.

Berlin, 1928. 180.–

FIRST EDITION. Offprint from the „Zeitschrift für Physik, 47". In the late 1920's and early 1930's, the problem that drew most of Sommerfeld's interest was the joint application of wave mechanics and Fermi statistics (see my catalogue FROM ALCHEMY TO ATOMS IV, nos. 705 ff.) to the behavior of electrons in metals. With the aid of his students, the American physicists William V. Houston and Carl Eckart (both Millikan disciples), Sommerfeld rehabilitated the electron theory of metals, which, after a promising beginning at the turn of the century, had languished under classical statistics and mechanics. (DSB)

In a letter to Millikan Sommerfeld noted that „Mit Ihren beiden Schülern Dr. Houston und Dr. Eckart bin ich sehr glücklich und hoffe, dass auch sie sich hier wohlfühlen. Mit Eckart habe ich die interessantesten Gespräche über grundsätzliche Fragen der Elektronentheorie und bewundere dabei die Schärfe und allgemeine Reife seiner Überlegung. Aber auch Houston bewährt sich vorzüglich" (Bethe, pp. 166, 170)

Friend Goethe's

236 SORET, FRÉDÉRIC-JACOB. Recherches sur la position des axes de double réfraction dans les substances cristallisées. Illustrated with 21 figures on an engraved folding plate. 1 leaf, 60 pp. 4to. Full contemporary green morocco, floral gilt line borders on covers, gilt decorated spine, all edges gilt.

Genève, Paschoud, 1821. 1200.–

FIRST EDITION OF THE AUTHOR'S FIRST AND MAJOR WORK in a splendid copy and apparently the special offprint from the „Mémoires de la Société de Physique et d'Histoire naturelle, I."

The fine contemporary green maroco binding suggests a provenence of the Russian Imperial Court. Soret was born in St. Petersburg, was a protegé of the Empress Maria Feodorowna and from 1822 until 1836 the tutor of her grandson in Weimar, Prince Karl Alexander von Sachsen-Weimar.

Frédéric-J. Soret (1795–1865) studied first in Geneva later, and more importantly, in Paris under Brogniart and Biot natural sciences and especially mineralogy.

In Weimar as tutor to the little prince he became a very close and intimate friend of Goethe's whose collection of crystalls he admired. However, it was not only the subject of crystallography in which – as Goethe once remarked – they „bedeutendste Forschungen anstellten", but also botany. Soret translated under Goethe's guidance the „Metamorphose der Pflanzen" into French (1831). Their exchange of letters is a lasting monument to the friendship of these two men.

ADB XXXIV, 692: HBLS VI, 451; Strehlke, Goethe's Briefe, SS. 230 ff.

First Italian to Write on Electricity

237 (SQUARIO, EUSEBIO). Dell' elettricismo: osia delle forze elettriche de' corpi svelate dalla fisica sperimentale, con un' ampia dichiarazione della luce elettrica. Sua natura, e maravigliose proprietà; aggiuntevi due dissertazioni attenenti all'uso medico di tali forze.

Titlepage printed in red and black; illustrated by a fine engraved frontispiece and three charming engraved plates in the text (as vignettes). XVI, 391 (+ 1) pp. 8vo. Fine contemporary full vellum, red spine lettering label.

Venezia, G. B. Recurti, 1746. 1800.–

FIRST EDITION of what apperars to be the very first book by and in Italian on the new medium electricity. A well preserved copy.

Eusebio Squario (or Sguario, as some bibliographers erroneously spell the name) appears to have lived a rather secret life because we could not – neither could any of the many bio-bibliographers of electricity, for that matter – establish the life data of our dear Eusebio Squario. He was a learned man, nevertheless, who as early as 1746, knew all about the contemporary publications of his fellow workers in electrical matters.

Squario gives a full account of electrical phenomena known up to the invention of the Leyden jar, including the two electricities, the Hauksbee threads, and all the German sparks and glows; he knows intimately the work of Winkler, Bose, Hausen and Nollet, and is himself, so he claims, an independent discoverer of a system of effluence and affluence. Of Bose we even have what purpots to be an eyewitness report of one of his exhibitions in Venice in the winter of 1739.

Squario's system of effluence and affluence has several progressive features. The afflux derives from the efflux, returned by the restistance of the air and by collisions among the effluent streams. He succeeded in obtaining electricity in vacuo, and hence rejected Cabeo's theory. His electrical matter is fundamentally the same as that of fire and light, expansive, constituted of particles mutually repulsive; it flows from the hand into the globe during operation of the machine; its force depends upon its quantity and the rapidity of its motion. And it is found everywhere, even in the heavens: „Who can frankly deny that ligthning is anything but a subtle electrical matter driven to the highest degree of violence?"

Of particular interest are the two dissertations at the end of the volume, both dealing with the use of electricity in medicine. They are amongst the very first publications in any language on the subject matter.

Deutsches Museum, Libri Rari 258 (only second edition, 1747); Heilbron, Electricity in the 17th & 18th Centuries, pp. 267, 364; Melzi I, 346; Ronalds 473 (only the dissertation); Rossetti-Cantoni 115; Wheeler-Gift 336.

Landmark in the History of Geology

238 STUDER, BERNHARD. Geologie der Schweiz. 2 volumes. Illustrated by a large lithographed folding-out map, fine contemporary handcolouring, and with numerous illustrations in the text. 2, IV, 2, 485 (+ 1 blank) pp.; VIII, 497 (+ 1 blank) pp. 8vo. Contemporary blue boards, original printed wrappers mounted.

Bern & Zürich, 1851–1853. 1100.–

FIRST EDITION of this epochal work – a landmark in the history of geology. A very fine and fresh set. In the following I may be allowed to cite from my own description of this item in BIBLIOTHECA HELVETICA XXI, 307, no. 179):

Bernhard Studer (1794–1887) aus Büren, Bern, trat bereits in jungen Jahren mit einer grundlegenden Arbeit über die Molasse vor die Öffentlichkeit. Mit ihm kam die schweizerische Naturforschung in ein verheissungsvolles Stadium: Spezialisierung und Vertiefung hiessen ihre Parolen. Studer wirkte befruchtend auf die Wissenschaft seiner Zeit. Aber nicht nur in geologischen Studien allein leistete Studer Grosses. Seine später durch die Errichtung des schweizerischen Beobachtungsnetzes gekrönten Bemühen um eine systematische meteorologische Forschungsorganisation, seine Vorschläge zum Schutze von Natururkunden und die Förderung der berühmten Dufourkarte, sowie seine, in dieser Katalogserie sehr häufig ziterte „Geschichte der physischen Geographie der Schweiz", bedeuten unschätzbare Verdienste um die eidgenössische Wissenschaft, wie um das öffentliche Leben.

Fueter, GSF, SS. 198 ff.; Zittel, Geschichte der Geologie, SS. 536 ff.; Ward & Carozzi, 2133.

239 STUDER, BERNHARD. Index der Petrographie und Stratigraphie der Schweiz und ihrer Umgebung. V (+ 1), 272 pp. Tall-8vo. Original cloth.

Bern, Dalp, 1872. 350.–

FIRST EDITION in a well preserved copy of this celebrated work by the great scientist.

„Eine neue Bearbeitung der Geologie unseres Landes möchte wohl, zwanzig Jahre nachdem die „Geologie der Schweiz" erschien, nicht überflüssig, vielleicht wünschbar sein . . . Einstweilen fühlt aber jeder, der sich um schweizer-, alpine oder jurassische Geologie bekümmert, das Bedürfnis, den gegenwärtigen Standpunkt derselben zu kennen, und, da eine systematische Darstellung späterer Zeit vorbehalten bleibt, möchte eine alphabetisch geordnete, aphoristische Zusammenstellung am zweckmässigsten erscheinen . . ." (Vorwort des Verfassers).

Fueter, Grosse Schweizer Forscher, 198 ff.; Zittel, Geschichte der Geologie, SS. 536 ff.; nicht bei Ward & Carozzi.

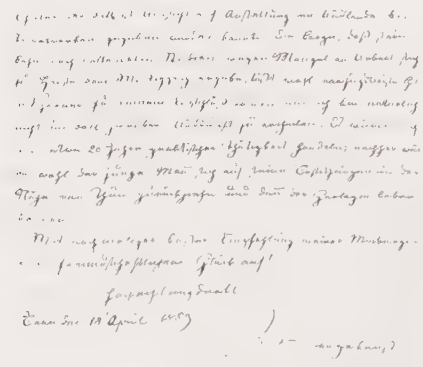
With a Fine Autograph

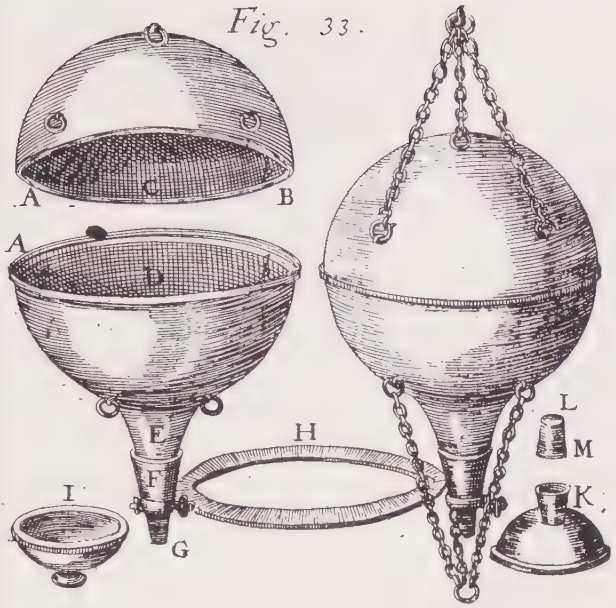
240 STUDER, BERNHARD. Lehrbuch der physikalischen Geographie und Geologie. 2 parts bound in 1 volume. 2nd edition. Illustrated by 8 (of which one is in contemporary colouring) plates and numerous woodcuts in the text. XII, 398 pp.; VIII, 526 pp. Large 8vo. Contemporary half calf with spine lettering label.

Bern, Chur, Leipzig, Dalp, 1847. 585.–

A WELL PRESERVED VOLUME OF A STANDARD WORK in the classical literature of geography and geology.

Inlaid is an interesting autographed letter by the author addressed to the geologist *Bernhard von Cotta (see item no 46)*, 1 1/2 pp. large-8vo, recomanding von Tscharner for a study at the famous Freiberger Bergakademie, dated Bern, April 18, 1959.





Rich Compendium of Scientific Inventions
Lorenz Heister's Copy

241 STURM, JOHANN CHRISTOPH. Collegium Experimentale sive curiosum. In quorum primaria seculi superuoris inventa & experimenta physico-mathematica. Speciatim campanae urinatoriae, camerae obscurae, tubi Torricelliani, seu baroscopii, etc. Partim ac aliis jam pridem exhibita, partim noviter istis superaddita . . . Secunda vice publicum adspicere voluit. 2 parts plus appendices „Tentaminum" and „Ad Henricum Morum Cantabrig. Epistola" bound in one volume. Illustrated by 4 large engraved folding-out plates and 227 engraved plates in the text. Several fine woodcut-initials and ornaments of which some are neatly coloured by a contemporary hand. 12 unn. leaves, 168 pp.; 122 pp., 6 unn. leaves; 10 unn. leaves, 256 pp.; 116 pp., 4 unn. leaves. 4to. fine contemporary vellum, overlapping edges.

Nürnberg, Wolfgang M. Endter, 1701–1715. 3800.–

SPLENDID FRESH & COMPLETE COPY OF THIS CELEBRATED STOREHOUSE OF CONTEMPORARY SCIENTIFIC INVENTION. Copy from the library of the famous 18th century German pioneer of surgery, Lorenz Heister (1683–1758), with whom a new type of surgeon was introduced in Germany. A thoroughly trained anatomist and surgeon, Heister became one of the most prominent surgeons in Europe. His „Chirurgie" first published in 1718 and soon being translated into almost all European languages, became the basis of the foundation of scientific surgery not only in Germany. His name is penned on the first title-page: „L. Heisterus".

The Experimental or Curious College of Johann Christoph Sturm, professor of mathematics and physics and rector of the university of Altdorf, was established on the plan of the celebrated Italian Accademia del Cimento and first held for twenty auditors in the last quarter of the year 1672. The society was founded for the purpose of studying, repeating and even modifying the most notable philosophical experiments of the day, such as those made by GUERICKE, BOYLE, HOOKE etc. The proceedings were FIRST PUBLISHED in 1676 and 1685 with appendices of supplementary matter.

The 16 Tentamina (volume I) are concerned with recent inventions such as the DIVING BELL, CAMERA OBSCURA, MAGIC LANTERN, TORRICELLIAN TUBE OF BAROMETER, AIR PUMP, THERMOMETERS, HYGROSCOPES, TELESCOPES AND MICROSCOPES. Very curious also is the X. lecture on FRANCESCO LANA's AIRSHIP (1670), describing the principle of the invention and giving a full page illustration of it, the EARLIEST REPRODUCTION FROM LANA'S PRODROMO (not mentioned in the bibliographies of Tissandier and Brockett).

Besides new forms of the foregoing instruments, there were added glass tears or Rupert's drops, SPEAKING TUBES, and the hydria Helmontiana adduced by Henry More in support of the hylarchic principle – an incorporeal cause or world soul which moved bodies. Sturm prints his letter to More concerning it and answers More's argument against the elasticity of the air.

Sturm's Collegium did not only repeat these experiments – they improved considerably on instruments and machinery: Sturm improved e. g. THE FIRST AIR-PUMP WITH VALVES AND DOUBLE CYLINDER, this design was essentially retained for over two hundred years. Sturm further essentially improved the MICROSCOPE CONSTRUCTING TWO CONVEX LENSES WHICH TOUCH EACH OTHER.

A very fine and complete set; very often only the first volume is being offered as it does not indicate on the title-page that a second part is to follow.

A DESIRABLE SET OF A RARE BOOK. –

Mottelay, pp. 129 ff.; Thorndyke, Hist. of Magic and Experimental Science VIII, pp. 223 ff.; Wheeler-Gift 182 & 199.

A Milestone in Geology
Inscribed Copy

242 SUESS, EDUARD. Die Entstehung der Alpen. IV, 168 pp. 8vo. Original yellow printed wrappers.

Wien, Braunmüller, 1875. 1200.–

FIRST EDITION. With presentation inscription by the publishers on the front wrapper, dated „1.VII.1875."

The dawn of new thoughts, full of freshness and interest. Eduard Suess in that work contested the upheaval of mountains and continents by forces acting vertically upward; he refuted the active participation of eruptive rocks in the origin of mountain chains, and after a brilliant description of the most important systems of the earth, he demonstrated that any arrangement of those according to geometrical laws was althogether illusory.

A. Heim in his „Geologie der Schweiz I, p. 17" refers to Suess' work with the lovingly words „Ein wahrhaft prophetischer Blick tritt uns in dem kleinen Büchlein entgegen, das ein Markstein in der Geschichte der Gebirgsgeologie überhaupt geworden ist." Its great influence may be judged from the flood of literature upon this subject which has poured forth since the year 1875.

Zittel, History of Geology, pp. 308–312; Mathew-Mason, A Source Book in Geology, pp. 503 ff.

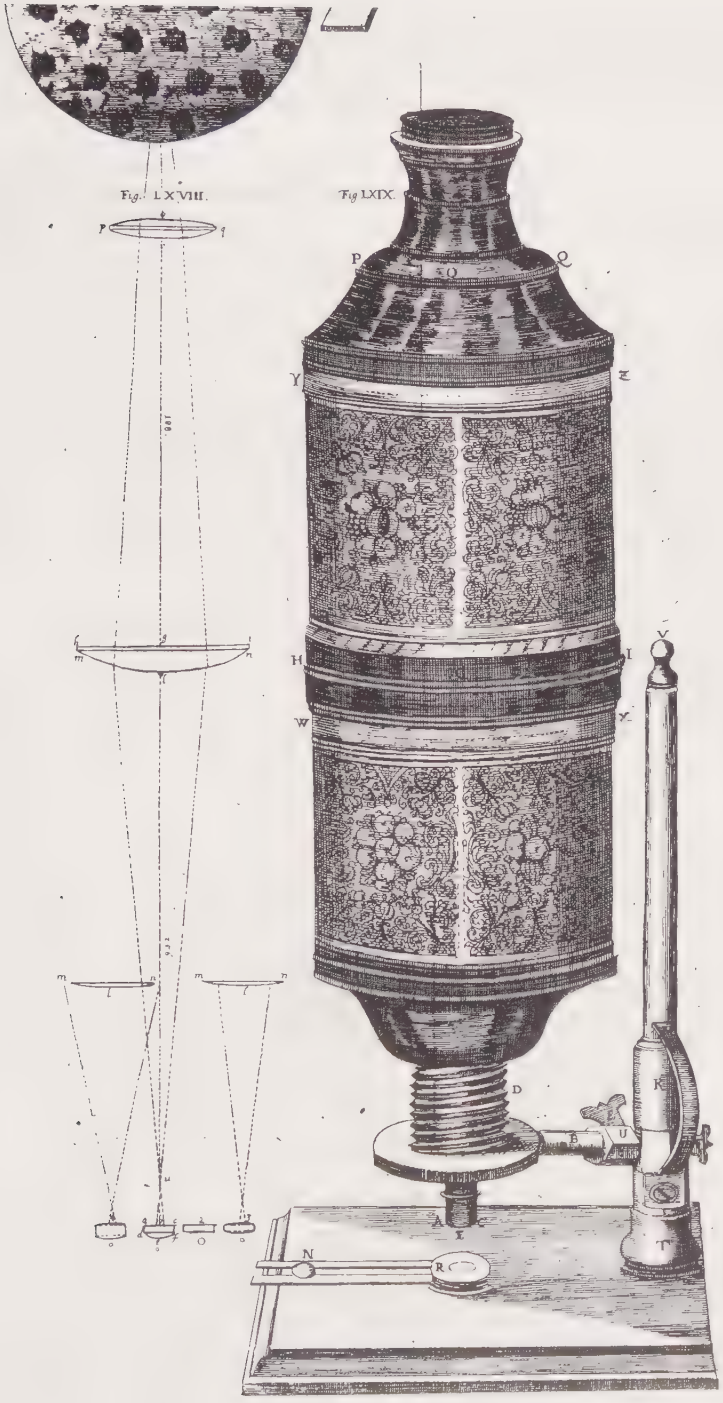
Future of Gold and Silver
Pioneer Geologist

243 SUESS, EDUARD. Die Zukunft des Goldes (bound with:) Die Zukunft des Silbers. 2 volumes bound in 1 volume. VI, 389 (+ 1 blank) pp.; IV, 227 (+ 1 blank) pp. Tall-8vo. Old private cloth binding, gilt lettering on spine.

Wien, Braumüller, 1877 & 1892. 480.–

FIRST EDITIONS of both titles. A fresh and clean volume. Before the publication even started of his great masterpiece „Face of the Earth" in 1883, Eduard Suess (1831–1914) published „Future of gold" which was, unlike the „Future of silver", never translated into English. Both works treat the subject from a purely geological point of view but also they are very much engaged in historical and economical aspects of those precious metals. The American government initiated the translation of the „Zukunft des Silbers" into English (1893).

DSB XIII, 143 ff.; Cf. Dibner, Heralds of Science, 99.



– No. 241 –

244 SUESS, EDUARD. La face de la terre. Traduit avec l'autorisation de l'auteur et annoté sous la direction de Emmanuel de Margerie. 3 volumes bound in 4. Illustrated with 9 (several of which coloured) maps and 468 illustrations. XV, 835; 4, 878; XII, 530; XII, pp. 531–956. Large 8vo. Original wrappers, uncut edges.

Paris, 1905–1911. 650.–

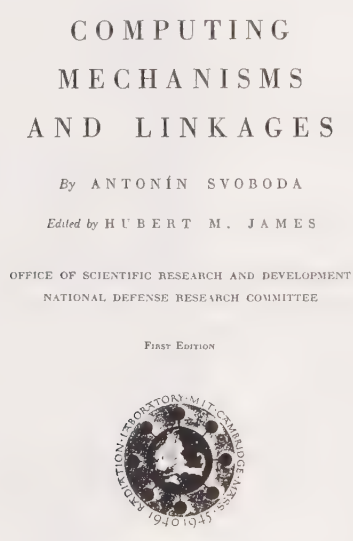
COMPLETE FRENCH EDITION; volume I in third, volume II in second and volume III in first edition. A well preserved set, excepting the wrappers, whose spines are largely gone. This French edition is very valuable on account of the extensive notes and the numerous illustrations specially made for this edition.

245 SUESS. – PETRINÒ, OTTO VON, Die Entstehung der Gebirge erklärt nach ihren dynamischen Ursachen. VI, 2, 74 pp. 8vo. Original grey printed wrappers.

Wien, Gerold, 1879. 125.–

FIRST EDITION in a fresh and well preserved copy.

This paper is based on Ed. Suess's „Über die Entstehung der Alpen", and, to an certain extend, continues where this ends. (From the author's preface.)


COMPUTING
MECHANISMS
AND LINKAGES

By ANTONÍN SVOBODA

Edited by HUBERT M. JAMES

OFFICE OF SCIENTIFIC RESEARCH AND DEVELOPMENT
NATIONAL DEFENSE RESEARCH COMMITTEE

First Edition

NEW YORK AND LONDON
McGRAW-HILL BOOK COMPANY, INC.
1948

Pioneering Work

246 SVOBODA, ANTONÍN. Computing Mechanisms and Linkages. Edited by Hubert M. James. First Edition. Illustrated by many text-figures and a nomogram folded in pocket inside backcover. XII, 359 (+ 3 blank) pp. Tall-8vo. Original cloth.

New York & London, 1948. 450.–

FIRST & ORIGINAL EDITION of an important publication in the early stages of the development of the modern computer.

In Czechoslovakia Antonin Svoboda was a pioneer. As early as 1952 he had been involved in building various kinds of calculating devices, and at the Darmstadt conference of 1955 he described his ARITMA as having „interesting similarities with the DERA computer". In addition, Svoboda and

his colleagues at the Institute of Mathematical Machines of the Academy of Science in Prague built several small machines. Svoboda is quite well known for his work on so-called residual classes, a very interesting novel way to do arithmetic. This work was also pioneered by Svoboda.

Goldstine, The Computer from Pascal to von Neumann, pp. 359.

Thomson's First Printed Book

247 THOMSON, JOSEPH JOHN. A Treatise on the Motion of Vortex Rings. An Essay to which the Adams Prize was adjudged in 1882, in the University of Cambridge. XIX, 124 pp. 8vo. Original publisher's cloth.

London, MacMillan, 1883.. 885.–

FIRST EDITION. A well preserved fresh and clean copy of a very rare book.

The Adams Prize is a substantial one given by Cambridge University for a mathematical essay on a topic chosen by the examiners. For the year 1882 they chose „Vortex Rings", and J. J. won the prize. The essay was first published in the present volume. In it the stability of interlocked vortex rings was investigated with great mathematical power, and it was shown that no more than seven could be linked together without breaking up into new arrangements. This study was inspired by the vortex atom theory of matter which is not now in date, but gives the first indications of J. J. Thomson's mind working on the problems of atomic structure. He learnt a lot about the technique of experiments at low pressures and acquired an interest in this most fascinating and fertile branch of physics. He continued to work at it for some years.

The title „the Man who Split the Atom" has been applied to several, but it was coined for J. J. in the late nineties when he proved that atoms contain parts which can be removed from them – electrons. Although electrons were his greatest discovery, J. J. Thomson (1856–1940) did many other things. As a young man he foreshadowed the discoveries of Einstein and in his mature years he had a large share in the discovery of isotopes. He was Professor in charge of the Cavendish Laboratory, which he did so much to make world famous and where ten future Nobel Laureates worked under him.

Rayleigh, Life of Thomson, pp. 13 ff.; Stanitz Collection 429.

Thomson's Model Atom

248 THOMSON, JOSEPH JOHN. Electricity and Matter. Illustrated with diagrams. 6 (first blank) leaves, 162 pp., 1 blank leaf. 8vo. Original dark blue cloth.

Westminster, Constable, 1904. 750.–

FIRST EDITION in a fine copy. In these important lectures, given by Thomson as the Silliman Memorial Lectures at Yale University in May, 1903, he suggests his model of the atom. Thomson was then working out the consequences of supposing that the negative electrons occupy stanionary positions in the atom. In order that the atom as a whole may be electrically neutral, there must be also a positive charge: and he saw that this could not be concentrated in positively charged corpuscules, since a mixed assemblage of negative and positive corpuscular charges could not be in stable equilibrium.

An American edition was published simultaneously with the present English edition but did not come off the press before June 11th, 1904, whilst the English edition appeared in April of that year.

Whittaker, History of Aether . . . II, p. 21. Stanitz 87 B; Stanitz Sale 426.

249 THOMSON, JOSEPH JOHN. The Electron in Chemistry. Being Five Lectures Delivered at the Franklin Institute, Philadelphia. 2, 6, 144, 2 pp. Large 8vo. Original red publishers cloth, gilt lettering.

Philadelphia, Franklin Institute, 1923. 200.–

FIRST EDITION. A well preserved fresh copy, complete with the first and last blank leaf.

Towards the end of 1922 J. J. was invited to give a course of lectures at the Franklin Institute of Philadelphia. He found it difficult to decide whether to accept; and at any rate the order for bulbs for

the garden must be sent off first. The terms offered were very generous, including a large fee and travelling from Cambridge as guests of the Institute both for himself and his wife and daugther. They sailed towards the end of March 1923.

The lectures were given on five consecutive days in April. In them J. J. proposes a model of the atom in which stability of the electrons is obtained by a different method from that of the sphere of uniformly diffused positive electrification which he had employed earlier.

Rayleigh, Life of Thomson, pp. 221 ff.

Nobel Laureats Personal Copy

250 THOMSON, JOSEPH JOHN. – Les Prix Nobel en 1906. With six fine portraits and illustrations on plates. Large 8vo. Original blue cloth, gilt lettering.

Stockholm, 1908. 880.–

ORIGINAL EDITON. With a fine calligraphic inscription in red and black ink on a special page preceeding the titlle: *„Joseph John Thomson from the Royal Swedish Academy of Sciences."* Including a list of the Nobel Prize Winners in physics and chemistry from 1901 to 1910 as well as the original letter of the Swedish Academy addressed to JJT asking for his suggestions of the 1912 chemistry prize – candidate. 4 pages, text in Swedish and French.

The volume contains JJT's Nobel Prize Lecture „Carriers of Negative Electricity", besides those by Ramon y Cajal (the 1906 Medicine Prize shared with Damillo Golgi) and by Golgi. – A fine association item.

Association Copy from the Lab that Built the Mark I

251 TOMPKINS, CHARLES BROWN – JAMES HENRY WAKELIN – W. W. STIFLER Jr. High speed Computing Devices. By the Staff of Engineering Research Associates, Inc. First Edition. Numerous text-illustrations. XIII (+ 1 blank), 451 (+ 3 blank) pp. Large-8vo. Original Cloth.

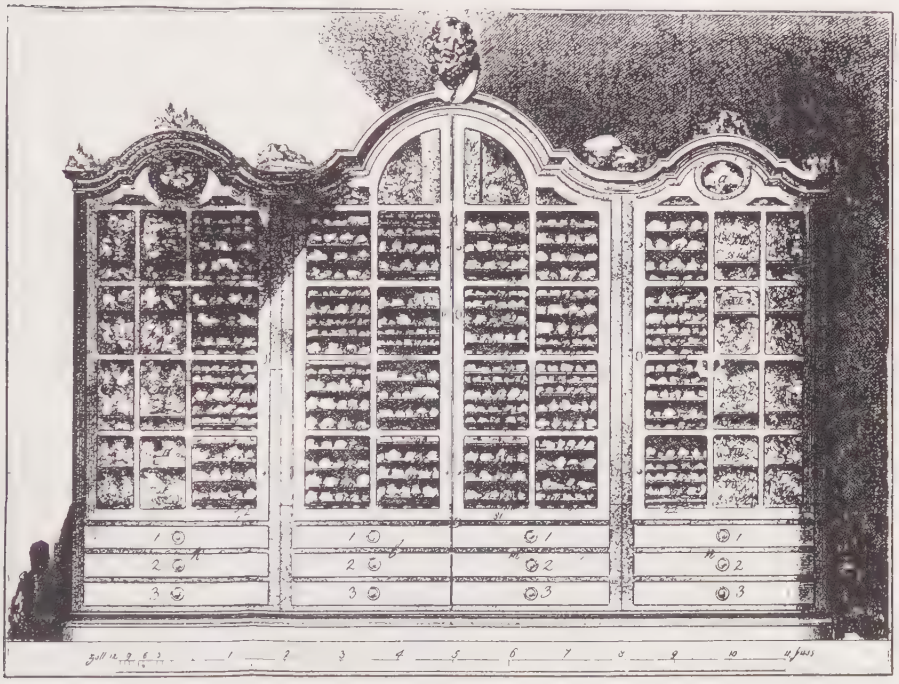
New York, 1950. 650.–

FIRST EDITION of a classical early volume in the history of modern computers. The Engineering Research Associates was formed at the war's end by a group which played a very active role during the war and developed great expertise in computing devices in general and in particular in relation to

magnetic drums. A summary of their work may be found in the volume offered here. On pages 218 ff. there is a list of some of their reports for the National Bureau of Standards on drum technology. There are excellent bibliographies in the book for anyone interested in this early history. The book contains also a very careful analysis of the electronic field as of 1950.

A well preserved copy with the famous triangular exlibris of the „Computation Laboratory of Harvard University", the lab that built the first automatic computer back in 1944, Aiken's MARK I. Exlibrary stamps.

Goldstine, The Computer from Pascal to von Neumann, p. 315 n.



The Prototype of 18th Century Mineralogical Collections

252 TREBRA, FRIEDRICH WILHELM HEINRICH VON. Mineraliencabinett gesammelt und beschrieben vom Verfasser der Erfahrungen vom Innern der Gebirge. Illustrated by a fine engraved aquatinta plate, folding-out. 212 pp., 1 unn. leaf. 8vo. Contemporary light brown kibitz-boards, coloured spine label, gilt spine decorations.

Clausthal, no printer, 1795. 1285.–

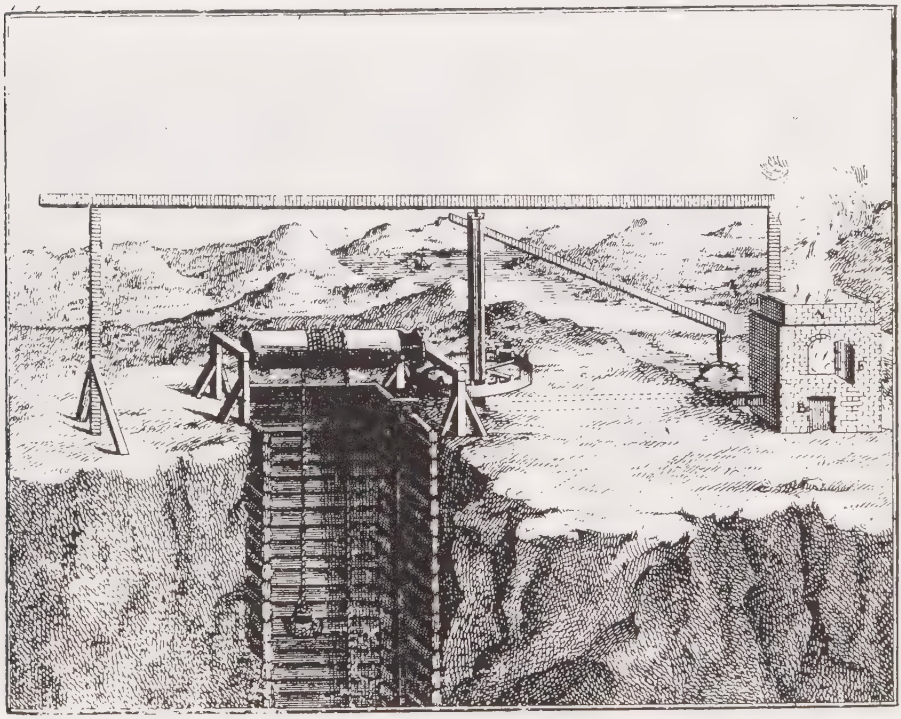
FIRST EDITION in a very fine and fresh copy.

Goethe's adviser in mineralogy, the mining authority, Friedrich Wilhelm Heinrich von Trebra (1740–1819) and also a close personal friend of Goethe's, describes here his own personal collection and its organisation according to scientific principles. This very detailed and comprehensive description became the foundation for many contemporary collections of minerals.

Friedrich Wilhelm Heinrich von Trebra (1740–1819) was one of the first students in the newly founded and soon famous mining academy at Freiburg, Saxony. He rapidly acquired considerable technical knowledge and carried out his assignements to the complete satisfaction of his superiors. As a result he was appointed inspector of mines at Marienberg; introducing many technical improvements into silver mining, he brought the industry of this region to a new level of prosperity. In recognition of his services Trebra was named Commissioner of Mines in 1770 and soon be became assistant

supervisor of mines for the bureau of Mines at Freiberg. In 1776 the duke of Weimar commissioned him to conduct a study of the underlying copper-bearing schist near Ilmenau. There he met Goethe, who had charge of the Ilmenau mines. The two remained close friends for nearly forty years.

ADB LIV, 708; DSB XIII, 455; Ruppert, Goethes Bibliothek, 4297; not in Hoover collection, not in Darmstädter, Fischer e. a.



253 (TRIEWALD, MARTEN). Von dem Bau der Steinkohlen. Mit einer Vorrede des Herrn Hofrath Medicus. Illustrated by 6 large engraved folding-out plates. 8 unn. leaves, 223 (+ 1 blank) pp. 8vo. Nicely bound in 19th century half calf, spine lettering label.

Mannheim, Mit akademischen Schriften, 1768. 1500.–

FIRST GERMAN EDITION in a well preserved copy. Included in the volume are three other works on the subject of coal mining by

Vogel, Rudolph Augustin: Von den Erdharzen – Partington III, 608 –

Schwab SJ, Johann: Wie das Hauptstreichen und fallen der Steinkohlen-Flötze zu finden. – Poggendorff II, 870 –

Scheidt, Karl August: Versuch Steinkohlen-Lager aufzusuchen und zu bearbeiten. – Meusel, Verstorbene XII, 123–124 –

Triewald's work occupies 115 pages and was first published in Swedish in 1739–1741. He has lived in England for ten years and was inspector in a coalmine in Newcastle. In 1738 he mooted the idea of, and, along with five others founded the Royal Swedish Academy of Sciences.

Ferguson I, 467; Poggendorff II, 1135; not listed by Fischer, Ward & Carozzi, Zittel e. a.; no copy of either one title in the rich Hoover collection, not in the Adams Collection e. a.

ON COMPUTABLE NUMBERS, WITH AN APPLICATION TO THE ENTSCHEIDUNGSPROBLEM

By A. M. TURING.

[Received 28 May, 1936.—Read 12 November, 1936.]

CAN MACHINES THINK ?

SPECIFICATIONS OF AN ABSTRACT COMPUTER

EPOCHAL PAPER

A MILESTONE IN THE HISTORY OF MICRO-ELECTRONICS

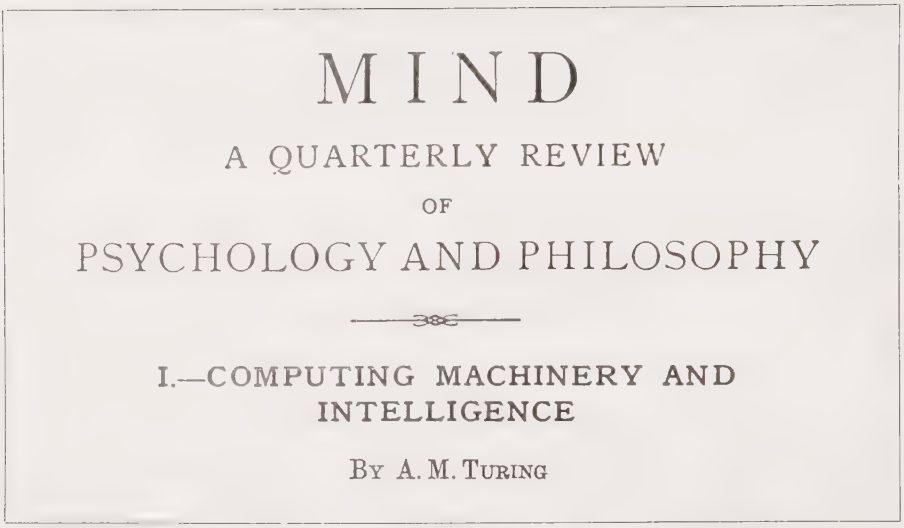
Epochal Paper

254 TURING, ALAN MATHISON. On Computable Numbers, With an Application to the Entscheidungsproblem. In: Proceedings of the London Mathematical Society, Series II, volume 42, pages 230–265. Tall-8vo. Original green printed wrappers. London, 1936–1937. 1200.–

ORIGINAL & FIRST EDITION of this truly epochal paper in the history of microelectronics. This paper stands in the very beginning of modern computer technology introducing the concept of a „universal" computing machine. A fresh set of the original issues.

In his 1936 paper „On Computable Numbers . . ." Alan M. Turing (1912–1954) specified a completely abstract, theoretical computer that could do any calculation a human could do. The UNIVERSAL TURING MACHINE featured many aspects that were later incorporated into all general computing machines. Alan Turing, with a „shrill stammer and crowing laugh which told upon the nerves even of his friends" (as his mother frankly put it) must have cut a memorable figure as he bicycled about Bletchley, a member of the task group that was to crack the German top secret cipher machine ENIGMA. Tall and powerfully built, a sloppy dresser, a lover of long-distance running, chess and children's stories. Turing was a bold and original numbers theorist with a Tesla-like ability to calculate in his head. A rough prototype of the coming age of Science and Machines, as a colleague once described him.

DSB XIII, pp. 497 ff.; Computerworld, History of Computing, 1981; Hanson, New Alchemists, pp. 39 ff.


MIND

A QUARTERLY REVIEW

OF

PSYCHOLOGY AND PHILOSOPHY

I.—COMPUTING MACHINERY AND INTELLIGENCE

By A. M. Turing

Can a Machine Think?

255 TURING, ALAN MATHISON. Computing Machinery and Intelligence. In: Mind, volume 69, pp. 433–460. 8vo. Original grey printed wrappers.

Edinburgh, October 1950. 485.–

FIRST & ORIGINAL EDITION of another of Turing's pioneering papers. He had returned to the subject in 1950 again because it had gained general interest with the increasing application of mechanical computing devices to more and more complex tasks. The Paper was addressed to a broad audience and is marked by a lively style:

„We may hope that machines will eventually compete with men in all purely intellectual fields . . . we can only see a short distance head, but we can see plenty there that needs to be done."

DSB XIII, 498.

256 TYNDALL, JOHN. The Glaciers of the Alps. Being a Narrative of Excursions and Ascents, an Account of the Origin and Phenomena of Glaciers, and an Exposition of the Physical Principles to which they are related. With illustrations. XX, 2, 444 pp. and 32 pp. publ. ads. 8vo. Clothbound.

London, Murray, 1860. 360.–

FIRST EDITION in a nice and well preserved copy.

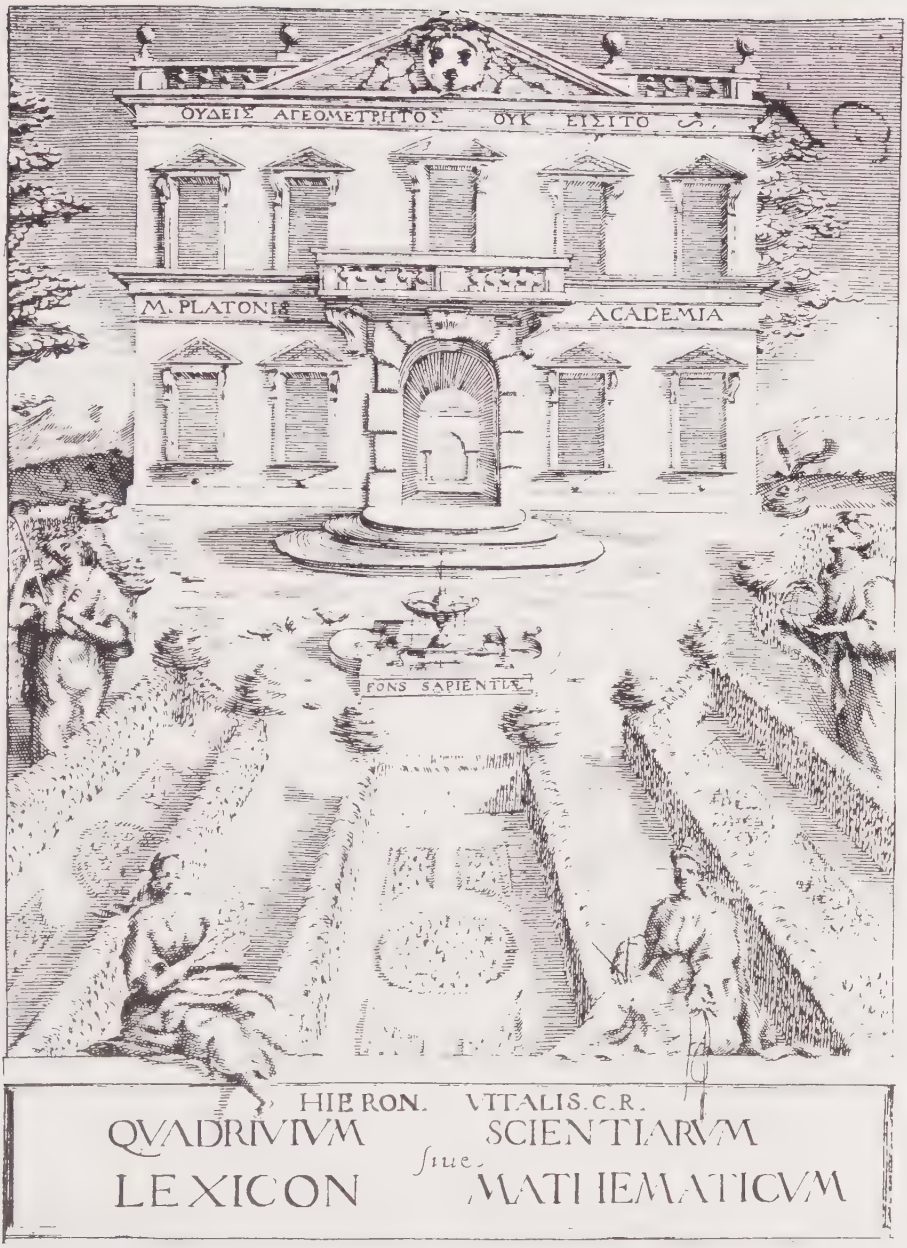
T. H. Huxley wrote: „Tyndall took up glacier work in consequence of a conversation at my table, and we went out to Switzerland together . . ." This was the first season of Tyndall's systematic observations on the Mer de Glace. The hotel on the Montenvers was too noisy: for the sake of quiet, therefore, I had my bed placed in the château next door, – a little octogonal building erected by some kind and sentimental Frenchman, and dedicated ‚à la Nature'. This was the pavilion erected by Bourrit in 1795."

De Beer, Travellers . . . S. 269, 274; Wäber 87.

257 TYNDALL, JOHN. The Glaviers of the Alps & Mountaineering in 1861. Mit Illustrationen. XIV, 274 SS. 8vo. Original-Leinen.

London, 1906. 80.–

Ein klassisches Werk. Erschienen in der Reihe „Everyman's Library". Gutes Exemplar.


ΟΥΔΕΙΣ ΑΓΕΩΜΕΤΡΗΤΟΣ ΟΥΚ ΕΙΣΙΤΩ
M. PLATONIS
ACADEMIA
FONS SAPIENTIÆ
HIERON. VITALIS C.R.
QVADRIVIVM SCIENTIARVM
sive
LEXICON MATHEMATICVM

– No. 260 –

Illustrations of Machinery in Iron Industry

258 VALÉRIUS, BENOÎT. Theoretisch-praktisches Handbuch der Stabeisen-Fabrikation nebst einer Darstellung der Verbesserungen, deren sie fähig ist, hauptsächlich in Belgien. Deutsch bearbeitet von Carl Hartmann. Illustrated by 30 lithographed folding-out plates. XVI, VIII, 606 pp., errata leaf. Large-8vo. Original printed boards.

Freiberg, Engelhardt, 1845. 650.–

FIRST GERMAN EDITION of one of the classical works on bar-iron production. Besides a few marginal stains here and there a well preserved copy in its original binding.

Benoît Valérius (1807–1873) was professor of applied chemistry at the military academy of Brussels. He lived and published in a period that was marked by fundamental changes in the iron industry. Coke and coal were substituted for charcaol as a fuel. Water was replaced by the first of the three great causes of industrial revolutions: by steam as a motive-power (the other two are the explosion engine and the gas-turbine in the last quarter of the 19th century and the first quarter of the 20th century resp.). Production of bar iron was increased considerably after the invention of puddling and of the grooved rollers which made it possible to produce wrought and bar iron more cheaply and in larger masses than with the hearths and hammers of the older forges. As a scientist, Valérius worked for the Belgium iron industry. His work was translated by the eminent German technologist Karl Hartmann (1796–1865) who also translated the other publications of Benoît Valerius into German.

Beck, Geschichte des Eisen IV, 382 ff.; Singer, History of Technology IV, 99 ff.; not in Hoover Collection; Poggendorff III, 1382.

Pioneering Geological Map of Northern Italy

259 VARISCO, ANTONIO. Carta Geologica della Provincia di Bergamo . . . 95 x 112 cm. Mounted on linnen, in protective slip case.

Bergamo, 1881. 850.–

The beautiful coloured map of the geology of the Province Bergamo. The map is rare.

260 VITALE (VITALI), GERONIMO. Lexicon mathematicum. Hoc est rerum omnium ad universam planè mathesim quoquo modo, directe, vel indirecte spectantium, collectio, et explicatio. With a fine engraved frontispiece, a folding-out table and numerous engravings and woodcuts in the text. Bound in 2 volumes. 34 unn. leaves, 1070, 2 pp. 4to. Contemporary limp vellum.

Rome, Jos. Vannachius, 1690. 1400.–

MUCH ENGLARGED EDITION in a well preserved and clean copy. The original edition of 1668 appeared only in a small octavo edition.

ONE OF THE EARLIEST DICTIONARIES OF ALL ASPECTS OF MATHEMATICS and scientific terms containing a wealth of information on the history of science and mathematics. The VITALI is easy to consult, all entries are arranged in alphabetical order according to subjects. – Some wormholes in volume two.

Riccardi I, 607; Poggendorff II, 1311; Zeitlinger-Sotheran I, 5109; Cantor, Geschichte der Mathematik III, 270.

261 VOGELSANG, H. Die Vulkane der Eifel in ihrer Bildungsweise erläutert. Ein Beitrag zur Entwicklungsgeschichte der Vulkane. With 1 large coloured folding-out plate. 2, 76, 4 pp. large 4to. Old boards.

Haarlem, 1864. 485.–

FIRST EDITION in a well preserved and unopened copy. This celebrated work won the gold medal of the Dutch Society of Science at Haarlem in 1864! –
Zittel, Geschichte der Geologie, pp. 402, 429.

262 VOGT, J. G. Die Kraft. Eine real-monistische Weltanschauung. Erstes Buch. Die Contraktionsenergie, die letztursächliche machanische Wirkungsform des Weltsubstrates (all published). Illustrated by 116 woodcuts in the text. VIII, 655 (+ 1) pp. Tall-8vo. Contemporary half calf.

Leipzig, Haupt & Tischler, 1878. 280.–

FIRST EDITION in a well preservced copy, it is the only part published and also the only edition of this important work in the history of science and philosophy in the last quarter of the 19th century.

„The pyknotic monism as accepted by Ernst Haeckel was founded by J. G. Vogt of Leipzig. Vogt presumes that reality „aus verschiedenen Verdichtungen der einen kontinuierlichen Substanz (Kontraktniosenergie) besteht". (Überweg, Grundriss der Geschichte der Philosophie IV, 1923, p. 325).

Krieg, DMNE II, 329.

Over 100 Author's Off-Prints – Liquid Crystals Basic Research

263 VOIGT, WOLDEMAR. A Comprehensive collection of author's off-prints from various scientific journals (Annalen der Physik; Abhandlungen der Ges. d. Wiss. zu Göttingen; e. a.) as well as two of his most important textbooks. Some of the off-prints with the author's presentation inscriptions, among which is one for his esteemed teacher *Franz Neumann (see item no)*, another for G. E. Müller (likely to be Georg Elias Müller, 1850–1934) and for *August Adolph Kundt (1839–1894), Röntgen's mentor and teacher.*

I assume that the collection was originally started by Kundt himself because most of the papers are stamped with Kundt's signature stamp; after 1892 one finds the manuscript exlibris of Graetz which I assume to be the physicist Leo Graetz (1856–1938), the papers after 1896 have the exlibris signature or stamps of Otto Wiener (1862–1927) and F(ranz). Himstedt (1852–19).

Hardly ever such a compact collection of the most important works of an author survives intact over such a long period of time. The collection represents well over 50 % of Woldemar Voigt's contributions to learned journals. *So far, there is no collected works edition available.*

Woldemar Voigt (1850–1919) at first undecided between a career in physics and a career in music, for the latter has always played a large role in his life: Felix *Mendelssohn* and Robert *Schumann* had been frequent visitors to his parent's house, he finally decided on a career in physics and yet, he was recognized as an expert on Bach's vocal works.

He came to Königsberg and under the influence of Franz Neumann, his deep respect and love for whom largely determined his career, in terms of subject matter, style of research and the manner in which he presented his work to the physics community. In 1883 Voigt was appointed ordinary professor of theoretical physics at Göttingen. His chief interest centered on the understanding of crystals, but near the turn of the century he became more and more concerned with the Zeeman effect and the electron theory.

According to the theories of *Poisson and Cauchy* which were based on special molecular assumptions, certain relationships must exist between the constants of a crystal regardless of its classification. Voigt determined the elastic constants for a wide variety of crystals and showed that the predicted relationships were not at all satisfied.

In 1887, in a paper on the Doppler effect in which he analyzed the differential equations for oscillations in an incompressible elastic medium Voigt established a set of transformation equations that later became known as the Lorentz transformations.

Voigt's extensive theoretical and physical researches were summed up in his large two volume treatise „*Kompendium der theoretischen Physik*", 2 volumes, 1895 and his researches on the nature of crystals were summarized in the „*Kristallphysik, 1910*". These treatises reveal the elegance of his mathematical treatments and the great orderliness that this research had brought to the understanding of crystals. this was PIONEERING WORK laying the foundations for all subsequent work on the subject as well as forming one of the foundations of ELECTRONIC INDUSTRIES.

In the following I list a selected few titles; a complete list may be had upon request.

1. Allgemeine Formeln für die Bestimmung der Elasticitätskonstanten von Krystallen durch die Beobachtung der Biegung Drillung von Prismen. 1882.
2. Volumen- und Winkeländerung krystallinischer Körper bei all- oder einseitigem Druck, 1882.
3. Theorie des Lichtes für vollkommen durchsichtige Media, 1883.
4. Theorie der electromagnetischen Drehung der Polarisationsebene, 1884.
5. Bestimmung der Elasticitäts-Constanten von Beryll und Bergkrystall. Festschrift für F. Neumann, 1886.
6. Theorie des Lichtes für bewegte Medien, 1887.
7. Theoretische Studien über die Elasticitätsverhältnisse der Krystalle, 1887.
8. Allgemeine Theorie der piëzo- und pyroelectrischen Erscheinungen an Krystallen, 1890.
9. Über die innere Reibung der festen Körper . . . 1890.
10. Beiträge zur Hydrodynamik I & II, 1891.
11. Zur Theorie des Lichtes, 1891.
12. Bestimmung der Constanten der Elasticität und Untersuchung der innern Reibung für einige Metalle, 1892.
13. Beiträge zur molekularen Theorie der Piëzoelectricität, 1893.
14. Über Medien ohne innere Kräfte und eine durch sie gelieferte mechanische Deutung der Maxwell-Hertz'schen Gleichungen, 1894.
15. Zur kinetischen Theorie idealer Flüssigkeiten, 1897.
16. Thermodynamisches zu den Wechselbeziehungen zwischen Galvanismus und Wärme, 1898.
17. Lässt sich die Pyroelectricität der Krystalle vollständig auf piëzoelectrische Wirkungen zurückführen?, 1898.
18. Über das bei der sog. totalen Reflexion in das zweite Medium eindringende Licht, 1898.
19. L'état actuel de nos connaissances sur l'élasticité des cristaux. Rapport préséenté au Congress internat. de Phys. réuni à Paris en 1900.
20. Beiträge zur Electronentheorie des Lichtes, 1901.
21. Electronenhypothese und Theorie des Magnetismus, 1901.
22. Zur Theorie der totalen Reflexion, 1903.
23. Etwas über Tensoranalysis, 1904. *Voigt in fact introduced in 1898 the term „tensor" into the vocabulary of mathematical physics.*
24. Über das Dopplersche Prinzip, 1915.
25. Flüssige Kristaslle und anisotrope Flüssigkeiten, 1916.
26. Struktur und Elasticitätstheorie regulärer Kristalle I & II, 1918.

etc. etc. etc. The collection, neatly preserved in two half-leather slip cases: 3200.–

DSB XIV, 61–63; Whittaker, History of the Theories of Aether and Electricity I & II numerous cit.; Todhunter, History of the Theory of Elasticity and of the Strength of Materials II, parts 1 & 2.

Dr. Alexander Volta

K. K. Professors der Physik ꝛc. zu Pavia

Schreiben

an den

Herrn Abt

Anton Maria Vasali

Lehrer der Physik an der Universität zu Turin ꝛc.

über die

thierische Elektrizität,

als eine Fortsetzung der Schriften desselben
über die thierische Elektrizität.

Herausgegeben

von

Dr. Johann Mayer

K. P. Hofr. ꝛc.

Prag bey Calve

1796

Key Work in Modern Electricity

264 VOLTA, ALESSANDRO. Schreiben an den Herrn Abt Anton Maria Vasali . . . über die thierische Elektrizität, als eine Fortsetzung der Schriften desselben über die thierische Elektrizität. Herausgegeben von JOHANN MAYER. 2 unn. leaves, 71 (+ 1 blank) pp. 8vo. Old coloured papers wrappers.

Prague, Calve, 1796. 2200.–

FIRST GERMAN EDITION, FIRST EDITION IN BOOKFORM. A well preserved copy.

In 1791 Luigi Galvani, professor of anatomy at the University of Bologna, published his now famous study of the electrical excitation of disembodied frog legs. He explained the jerking of a leg on completing a circuit through the crural nerve and the leg muscel as the direct result of the discharge of a „nervo-electrical fluid" previously accumulated in the muscle, which he supposed to act like a Leyden jar. There were reasons to doubt Galvani's elucidation of the results of his odd studies. So Volta at first dismissed his experiments as unbelievable and miraculous. He had a low opinion of physicians who dabbled in his subject, ignorant of the known laws of electricity as he pleased to call those. He tried the experiments himself, with little hope of success, on the urging of his colleagues in pathology and anatomy at the University of Pavia. By April 1, 1792, the experiments had succeeded. Volta began the brilliantly planned and executed experiments that brought him to the invention of the pile.

One of the important and for Volta characteristic steps, was to determine what he called the electromotice force of various combinations of conductors and confirmes his own contact electricity theory. Volta's letter was published in the original Italian only in a scientific journal volume and is here published for the first time in a separate book.

Heilbron, Electricity in the 17th & 18th Centuries, pp. 490 ff.; Ronalds Wheeler-Gift 603.

Pioneer of Cybernetic Models

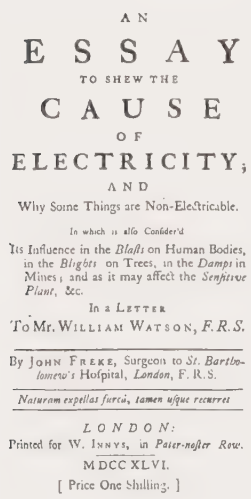
265 WALTER W. GREY. The Living Brain. Illustrated. 311 (+ 3 blank) pp. 8vo. Original cloth in original dust-jacket.

New York, Norton, 1953. 275.–

FIRST EDITION of a pioneering work in the history of cybernetics and computers.

This is a pioneer work of great importance – the first attempt to record the tremendous advances in brain physiology. The modern science of electroencephalography probes the deep mysteries of the human brain, casting new light on memory, genius, lunacy, crime, hypnotism, sleep, and fatigue. This work was the basis of much theoretical groundwork in developing computer programs.

The author, W. Grey Walter, has pioneered himself most of the developments in EEG in Great Britain during the 1950s.



AN

ESSAY

TO SHEW THE

CAUSE

OF

ELECTRICITY;

AND

Why Some Things are Non-Electricable.

In which is alſo Conſider'd

Its Influence in the *Blaſts* on Human Bodies, in the *Blights* on Trees, in the *Damps* in Mines; and as it may affect the *Senſitive Plant*, &c.

In a Letter

To Mr. William Watson, *F.R.S.*

By John Freke, Surgeon to *St. Bartholomew's* Hoſpital, *London*, F.R.S.

Naturam expellas furcâ, tamen uſque recurret

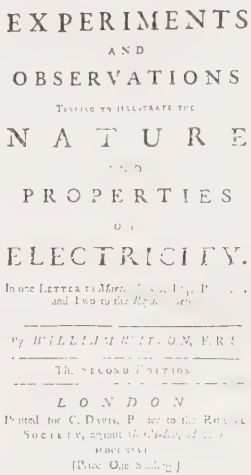
LONDON:

Printed for W. Innys, in *Pater-noſter Row.*

MDCC XLVI.

[Price One Shilling.]

– No. 266 –



EXPERIMENTS

AND

OBSERVATIONS

TENDING TO ILLUSTRATE THE

NATURE

AND

PROPERTIES

OF

ELECTRICITY.

In two LETTERS to *Mart[illegible]* P[illegible] and Two to the *Roy[illegible]*

By WILLIAM WATSON, F.R.S.

The SECOND EDITION

LONDON

Printed for C. Davis, Printer to the Royal Society, against [illegible]

MDCC XLVI.

[Price One Shilling.]

– No. 266 –

Der

Galvanismus

und

Theorie desselben.

Von

Dr. Joseph Weber,

der Königl. Baier. Akademie der Wissenschaften zu München ordentl. ausw. Mitglied, Director des K. Lyceums und Professor der Physik in Dilingen.

München 1815.

Bei Jakob Giel.

– No. 267 –

Franklin's Mentor

266 WATSON, WILLIAM. Experiments and Obervations Tending to illustrate the Nature and Properties of Electricity. The Second Edition. 1 unn. leaf, VIII pp., pp. 3–59 (+ 1 blank) pp. 8vo.

London, C. Davis, 1746.

And bound with:

FREKE, JOHN. An Essay to show the Cause of Electricity; and why some things are Non-Electricable. In which is also Consider 'd Its Influence in the Blasts on Human Bodies, in the Blights on Trees, in the Damps in Mines; and as it may affect the Sensitive Plant, etc. In a Letter to Mr. William Watson, F. R. S. VIII, 51, 1 pp. 8vo. Half vellum.

London, W. Innys, 1746. 1200.–

Ad I: FINE COPY of the second edition of which Cohen in his treatise „Franklin and Newton" states on page 391/2 (footnote) that he has „not been able to find a second edition", supposing that it was not published at all outside the Philosophical Transactions.

William Watson (1715–1787), the greatest of Franklin's immediate predecessors, was a physician and naturalist, who began as an apothecary, published a number of botanical and medical papers, was knighted in 1786, but is remembered today chiefly for the electrical research he conducted in the 1740's and for which he was awarded the Copley Medal of the Royal Society in 1753. He was the leading electrician in England at the time when Franklin began his research. It is no exaggeration to say that Watson was Franklin's master and guide in the study of electricity; Franklin studied each of Watson's papers with care and they influenced his own concept of electrical action in a variety of ways. His major contributions on electricity were three papers all of them published in the Philosophical Transactions and in three pamphlets, each of which went through several editions and of which the present is the most important. In it Watson describes the ignition of warmed spirits by electric sparks. The other important discovery was the failure of an expectation authorized by the commonly held effluvial theory of electricity. He anticipated that by insulating himself while rubbing a glass tube, he could generate more electricity than if he stood upon the floor and let the effluvia run to ground. Failure suggested to him, as it did to Franklin, that rubbing did not collect electrical matter from the glass, but raised it from the ground; in a word, the tubes and globes acted as „pumps" circulating the electrical „fire".

For a detailed description I refer the reader to Cohen's Franklin and Newton, pp. 390–424; DSB XXIV, 193; Wheeler-Gift 333 (3rd edition); Mottelay 175–177.

Ad II: FIRST EDITION of an important treatise, present there in a fresh copy; lower corner of titlepage restaured.

John Freke (1662–1744), surgeon to St. Bartholomew's Hospital in London, considentity of lightning and electricity.

Mottelay 201; Wheeler-Gift 325.

Life is Galvanism

267 WEBER, JOSEPH. Der Galvanismus und Theorie desselben. 64 pages. 8vo. Original contemporary boards.

München, Jakob Giel, 1815. 480.–

FIRST EDITION in a very fine and fresh copy.

Joseph Weber (1753–1831), friend of the enlightenment, professor of physics at the universities of Dillingen and Ingolstadt, converted to Naturphilosophie in 1803–1804, after endorsing Kant and being censured for his trouble. In the early 1770s, while still studying theology, Weber bought an electrical machine from an old-clothes peddler. The purchase showed its value in 1778 when, just after his ordination, he won a prize from the Bavarian Academy of Sciences for an „air electrophore", or air condenser with a moveable coating, whose action he explained in the modern manner, using „atmosphere" to mean „sphere of activity". Following in the steps of the famous Ritter he states at the end of the essay on galvanism:

„Wir sehen in dem Galvanismus das sich selbst erzeugende Leben in seinem Beginn. Der Galvanismus ist dabei der nächste Ring, welcher die anorganische Natur mit der organischen verbindet, er ist das Lebendige in seinen Anfängen: sofern ist das Leben organischer Wesen nur vollkommenst ausgebildeter Galvanismus".

Weber's career would repay study (Heilbron).

Heilbron, Electricity in the 17th & 18th Centuries, pp. 424 ff.; Poggendorff II, 1272 & Ronald 537 only list editions of 1816; Seyffer, Geschichtliche Darstellung des Galvanismus, 1848, p. 204; not in Wheeler-Gift.

ÜBER EINE NEUE BEHANDLUNGSWEISE

DER

ANALYTISCHEN SPHÄRIK,

VON

A. F. MÖBIUS.

Absolute Units of Measurement

268 WEBER, WILHELM. Elektrodynamische Maassbestimmungen. Illustrated with 21 illustrations in the text. 169 pp. Large 8vo. Contemporary full red half, richly gilt decorated spine and covers in romantic style, all edges gilt.

Leipzig, 1846. 1200.–

FIRST EDTION – in a fine clean copy from the library of the Dukes of Altenburg – of Weber's GREAT WORK ON ABSOLUTE MEASUREMENT.

The volume contains several other important papers, e. g.: W. Wachsmuth's Briefe von Leibniz an Christian Philipp; Drobisch, Ueber die mathematische Bestimmung der analytischen Sphärik; Seebeck, Ueber die Schwingungen der Saiten; Reich, Elektrische Versuche etc.

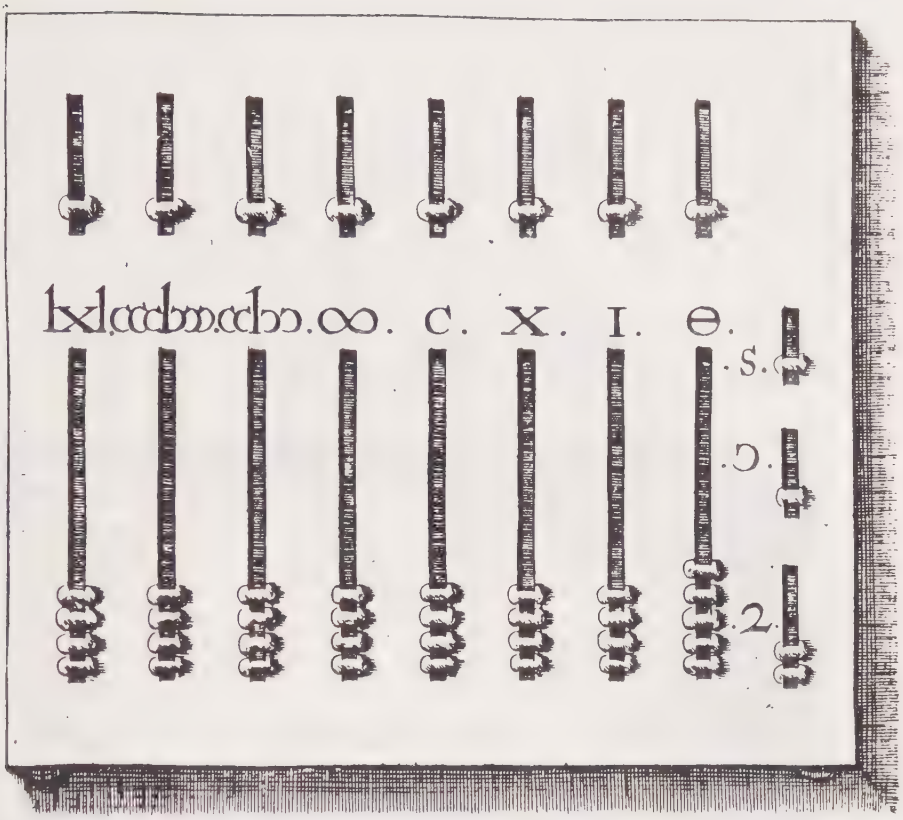
One of the most important contributions to this volume, besides the aforementioned Weber, is the following:

MOEBIUS, AUGUST FERDINAND. Ueber eine neue Behandlungsweise der analytischen Sphärik. pp. 47–86, with separate title-page and 1 engraved plate.

Leipzig, 1846.

FIRST EDITION of the MOST SIGNIFICANT CONTRIBUTION OF MOEBIUS'S to the Publications of the Leipzig Academy of Sciences, of which he was a long term member, written at its foundation, in 1846.

Coolidge, History of Geometrical Methods, pp. 148–150 ff. Wheeler-Gift No. 1110; Dunsheath, History of Electrical Engineering, pp. 295 ff.



A Renaissance Merchant's Calculating Machinery
The Merchant House of Welser – Venezuela

268A WELSER, MARCUS. Opera historica et philologica, sacra et profana. In quibus historia Boica, res Augustanae, conversio & passio . . . Edited by Christoph Arnold. Illustrated by the fine engraved frontispiece, 16 engraved maps (most of them double-page spread), 52 engraved plates, 24 finely engraved vignettes, and 52 woodcut initials. 9 unn. leaves, 68 pp., 20 unn. leaves, 908 pp., 46 unn. (the last a blank) leaves. Folio. Fine contemporary smooth vellum.

Nürnberg, Wolfgang Mauritius & fil., J. A. Endter, 1682. 2685.–

FIRST COLLECTED EDITION in a splendidly designed and produced volume. A fresh and very well preserved copy.

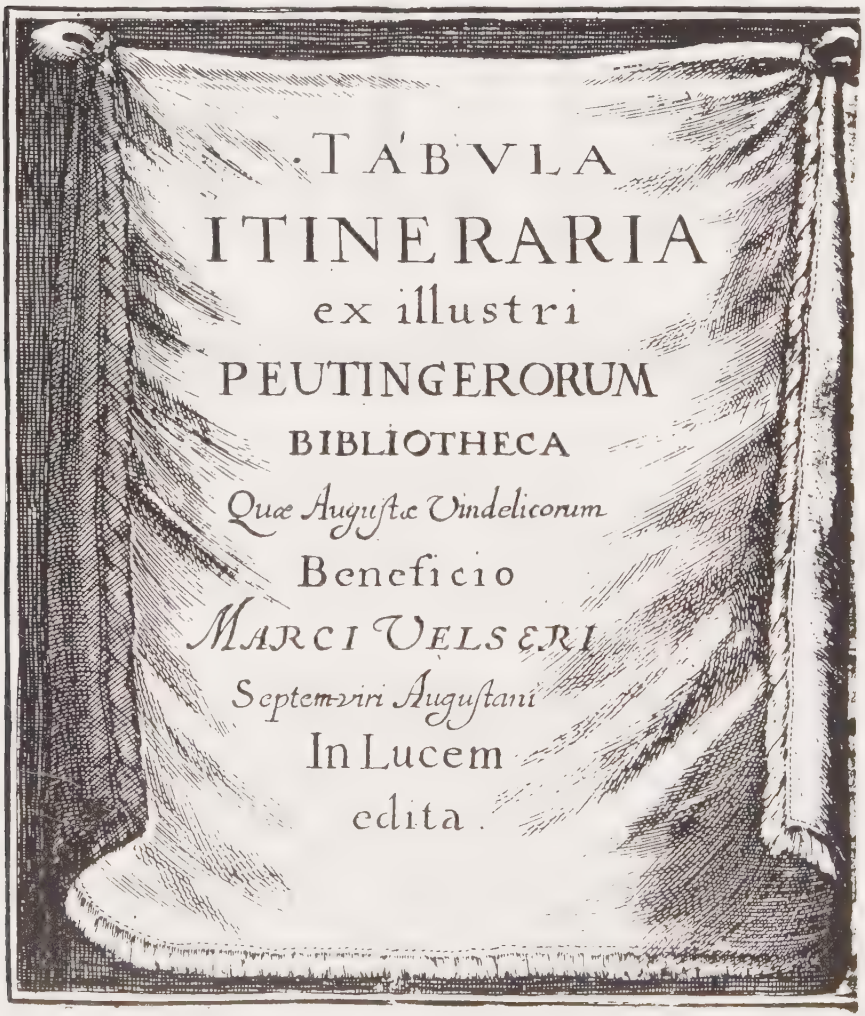
The Welsers, a powerful family of merchants from Augsburg, first became important during the 15th century, when the brothers Bartholomaeus and Lucas Welser carried on an extensive trade with the Levant and elsewhere, and had branches in the principal trading centers in Germany, Italy, and also in Antwerp, London and Lisboa. They lent large sums of money to Charles V. and with his consent became promoters of an expedition under Ambrosius Dalfinger which in 1528 seized the province of Caracas in Venezuela. Under authority of Charles V. the Welsers governed Vernezuela for their own profit from 1528–1555. The fine engraved map of Venezuela in this volume illustrates the description of the Welser activities in Latin America.

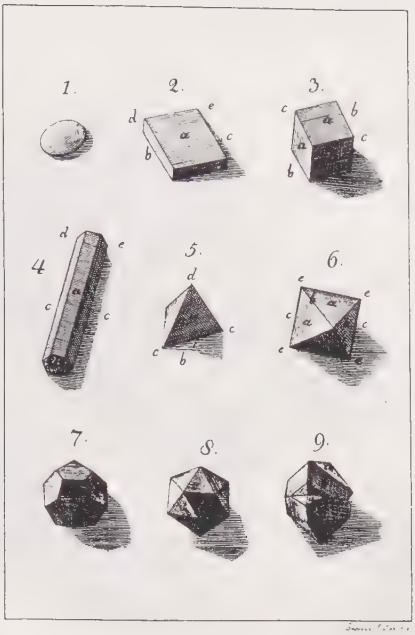
However, perhaps the most famous member of the Welser family was Marcus Welser (1558–1614). Educated in Italy. Marcus became burgomaster of Augsburg, but was more distinguished for his scholarship and his writings. The most important of his many works is his „Rerum Boicarum", dealing with the early history of his native Bavaria.

Another of Welser's epochal achievements is his publication of the ancient road map of the Romans known as the TABULA PEUTINGERIANA. Unearthed by the great humanist Konrad Celtes (1459–1508), who turned it over to Konrad Peutinger (1465–1547). Again, the Colmar manuscript was lost once more after only two sections had been copied which Markus Welser published for the very first time in 1591. A few years later, he was happy to find the lost manuscript again. A complete edition of the TABULA PEUTINGERIANA had to wait, however, until the present first collected works edition and the Scheyb edition of the map was published in 1682 and 1753 resp. (see my travel catalogue 245, item no. 177).

There is another very interesting illustration in this richly illustrated edition – together with a description – and for a member of a family of merchants this is quite natural, of an early calculator: the ABACUS.

A fine fresh copy of a rare and sought after edition.
Brunet V, 1117; Graesse V, 246; Sabin 102615.
The World Encompassed, Boston, Walters Art Gallery, No. 5; Weber, Tabula Peut., facs. ed. 1976; Beazley, Dawn of Geography I, 377 ff.; Sarton, Introductin I, 323 ff.





Splendid colour samples of Minerals

269 WIDENMANN, JOHANN FRIEDRICH WILHELM. Handbuch des oryktognostischen Theil der Mineralogie. Illustrated by two engraved plates both of which fold-out; one with 74 finely executed handcoloured mineral colour-samples. XIV pp., 3 unn. leaves, 1040 pp., 2 unn. leaves „Erklärung der Kupfer" and 8 unn. leaves „Register". Thick-8vo, Charmingly bound in contemporary imitation catspaw calf (i. e. boards) with coloured spine lettering label, gilt-line decorations.

Leipzig, S. L. Crusius, 1794. 3400.–

FIRST EDITION in a fine and fresh copy printed on special blue paper for Franzisca von Hohenheim (1748–1811) morganatic spouse of Duke Karl Eugen von Württemberg. It was designed as a textbook for the Duke's famous Karls-Schule at Stuttgart which some years previously had been young Friedrich von Schiller's educational institution.

Johann F. W. Widenmann (1764–1798) was professor of mining and mineralogy at the very same school. He later was created a state's mining councelor upon the school's disintegration. He published a number of books on mineralogy and mining of which the present „Handbook of Oryctognostic Mineralogy" was even translated into Spanish in 1797–8.

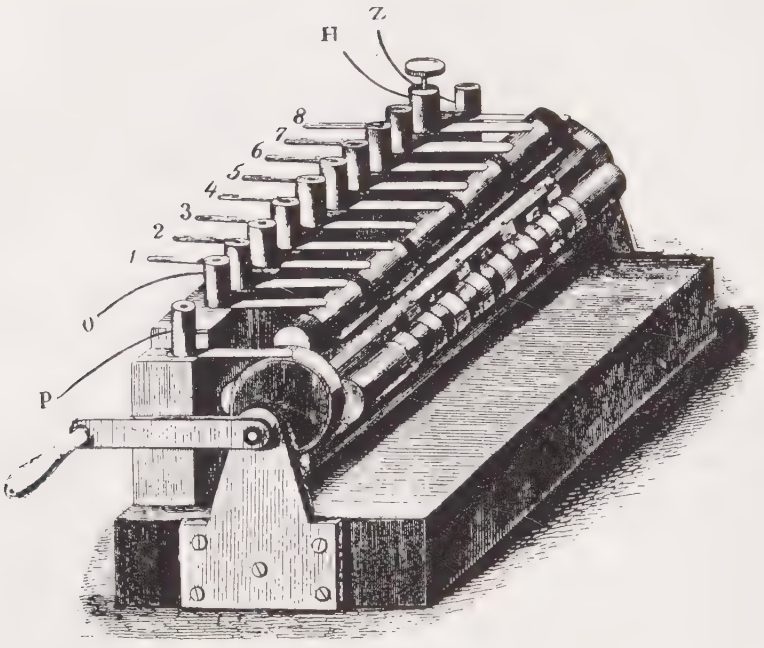
Poggendorff II, 1314/15; Ward & Carozzi, Geology Emerging, 2333 pp.

270 WILLE, G. A. Geognostische Beschreibung der Gebirgsmassen, von der Lahn nach dem Main, Rhein und der Nahe . . . Illustrated by two large engraved folding-out maps in fine contemporary handcolouring. VIII, 168, 2 pp. 8vo. Contempory boards.

Mainz, 1828. 480.–

FIRST EDITION with author's manuscript presentation inscription on front fly-leaf.

Fig. 143.



Encyclopedia of Electricity in the 19th Century

271 WIEDEMANN, GUSTAV. Die Lehre vom Galvanismus und Elektromagnetismus nebst ihren technischen Anwendungen. 2 volumes. Sumptuously illusstrated by 596 woodcut illustrations in the text and an engraved colourplate. XI (+ 1), 680 pp.; IX (+ 1), 1183 (+ 1) pp. Large-8vo. Contemporary half morocco, gilt decorated spines. Braunschweig, Vieweg & Sohn, 1861–1863. 1800.–

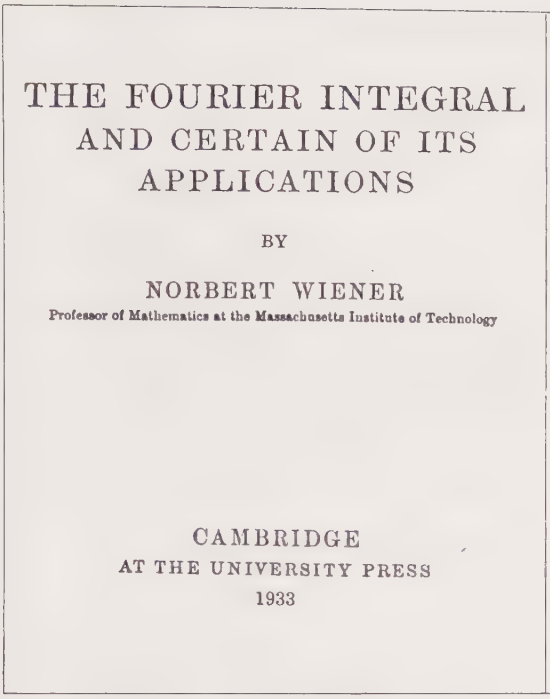
FIRST EDITION OF ONE OF THE GREAT STANDARD WORKS IN THE HISTORY OF PHYSICS & ELECTRICITY. A fresh and well preserved set.

Gustav Heinrich Wiedemann (1826–1899), whose name became a synonyme for the journal he edited over a great many years: „Wiedemann's Annalen" now known and respected all over the world as the „Annalen der Physik", he was one of the outstanding members of the group of physicists trained in Berlin by H. G. Magnus. Wiedemann held the first professorship of physical chemistry created in Germany (which was the very first world wide!)

Wiedemann was successivly professor in Basel, Brunswick, Karlsruhe und Leipzig. Besides being a prolific writer of scientific papers and handbooks, his original work was also very important. His data for the thermal conducivity of various metals were for long the most trustworthy at the disposal of physicists, and his determination of the OHM in terms of the specific resistance of mercury showed remarkable skill in quantitative research. He carried out a number of magnetic investigations which resulted in the discovery of many interesting phenomena, some of which have been rediscovered by others; they related among other things to the effect of mechanical strain on the magnetic properties of the magnetic metals, to the relation between the chemical composition of compound bodies and their magnetic properties, and to a curious parallelism between the laws of torsion and of magnetism. He also did highly important and successful in work in electrical endosmosis and the electrical resistance of electrolytes.

His great textbook „Lehre vom Galvanismus" is a book that is unsurpassed for accuracy and comprehensiveness. The first edition appeared in 1861 to 1863 and was quickly recognized as the standard work on galvanism and was widely read. A fourth revised and enlarged edition was only completed a short before his death in 1893–1898. Since then, no comparable work has ever been published again.

DSB XIV, 329 ff.; Ronalds 542; Wheeler-Gift 1537.

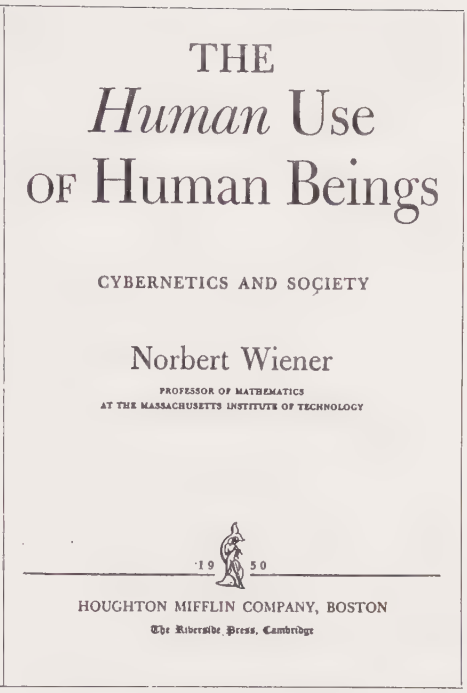

THE FOURIER INTEGRAL
AND CERTAIN OF ITS
APPLICATIONS

BY

NORBERT WIENER

Professor of Mathematics at the Massachusetts Institute of Technology

CAMBRIDGE
AT THE UNIVERSITY PRESS
1933


THE
Human Use
OF Human Beings

CYBERNETICS AND SOCIETY

Norbert Wiener

PROFESSOR OF MATHEMATICS
AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY

1950

HOUGHTON MIFFLIN COMPANY, BOSTON

The Riverside Press, Cambridge

Father of Cybernetics

272 WIENER, NORBERT. The Fourier Integral and certain of its Applications. XI (+ 1 blank), 201 (+1) pp. Tall-8vo. Original dark blue cloth.

Cambridge, 1933. 450.–

FIRST EDITION in a fresh and well preserved copy.

Norbert Wiener (1894–1964), a child prodigy, he obtained his doctorate when he was only 19 and in 1919 went to MIT to teach. Wiener was a colourful character and one of the word's great bad lecturers. He coined the term cybernetics to encompass a wealth of his own insights and others from the work of Shannon, Bush, Turing in England and a number of America's foremost mathematicians, among them John von Neumann, McCulloch and Weaver. The whole history of microelectronics and computer systems is in a sense the tale of cybernetics in action.

273 WIENER, NORBERT. The Human Use of Human Beings. Cybernetics and Society. 12, 241 (+ 3 blank) pp. 8vo. Original cloth.

Boston, 1950. 380.–

FIRST EDITION of Norbert Wiener's study on the social and religious implications of cybernetics. Like many a happy hooker who later became a holy water frog, Wiener in 1947 announced he would contribute no further to any form of military research, and spent the rest of his life trying to alert humanity to the significance and problems of the coming age of automation. It is interesting to note, that in the same period, the late 40s and the early 50s, the German Trade Unions vehemently demanded the application of modern technologies to lessen the burder of the worker. In the 80s they have completely forgotten their earlier demands and short sighted politics.

Hanson, The New Alchemists, pp. 51 ff.

AUTOMATIC DIGITAL COMPUTERS

by

M. V. WILKES

F.R.S.

Director of the University Mathematical Laboratory, Cambridge

LONDON: METHUEN & CO. LTD
NEW YORK: JOHN WILEY & SONS INC

274 WILKES, MAURICE VINCENT. Automatic Digital Computers. Illustrated by 9 plates, and numerous figures in the text. X, 305 (+ 5 blank) pp. 8vo. Original green cloth.

London, Methuen, 1958. 250.–

A CLASSIC VOLUME in a well preserved copy.

Maurice V. Wilkens was student of the famous Moore School of Electrical Engineering at Philadelphia where the world's first electronic automatic calculating machine was built back in 1946, the famous ENIAC. The bussily blinking, sissing, hissing giant occupied a ground space equivalent to that of a spacious apartment, worked on 18000 electron tubes and did the same your creditcard shaped pocket calculator does many fold over. This is development!

Wilkens, the inventor of the micro-program, gives here one of the best early surveys and detailed discussions of the origins of computers. After a detailed discussion of the Babbage analytical engine, Ludgate is mentioned, and Torres y Quevedo's work is described very briefly. It then gives quite a lot of detail on the Harvard Mark I, ENIAC, EDVAC, the Bell Laboratories Computer Models V and VI and the Harvard Mark II.

Randell, Annot. Bibliogr. opf Computers in: Annals of the History of Computing I, No. 2, p. 173; Goldstine, Computer from Pascal to Neumann, various cit.; Vorndran, Entwicklungsgeschichte des Computers, pp. 99, 145.

Third of Mendeleev's Predicted Elements
First Crystal of Electronic Age

275 WINKLER, CLEMENS ALEXANDER. Germanium, Ge, ein neues, nichtmetallisches Element. In: Berichte der Deutschen Chemischen Gesellschaft, volume XIX, pp. 210–211. Tall-8vo. Modern boards.

Berlin, Chem. Gesellschaft, 1886. 365.–

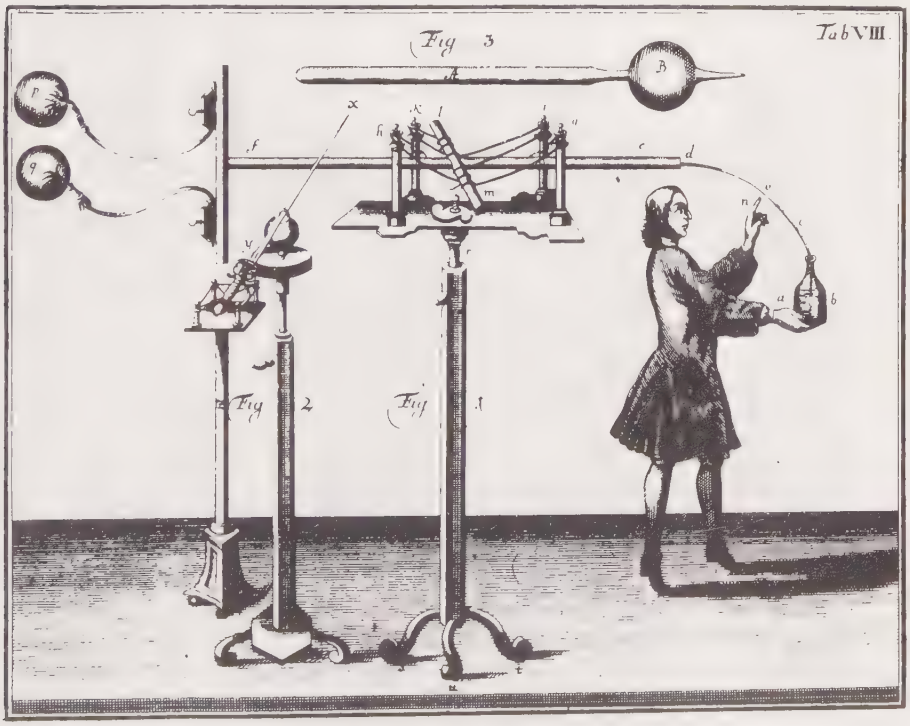
FIRST EDITION of the discovery report of GERMANIUM, the element which inspite of its name was to play such an important part in the allied victory over Hitler's army, navy and airforce. Known to numerous radio freaks in the early days of the steam radio as the crystal-radio, it advanced to RADAR and later to TRANSISTOR, before it was replaced by the more adaptable SILICON which transformed the orchards of Santa Clara County into Silicon Valley.

Clemens Alexander Winkler (1838–1904), whose father had studied under Berzelius and became a chemist and metallurgist, studied at the world famous Freiberg Academy and School of Mining. Early in his career Winkler developed new techniques for analyzing gases. He was proud of the accuracy and efficiency of his analytical methods and was upset when in 1885 he analyzed a silver ore and found that all the elements he located amounted to only 93 percent of the whole. There was a missing 7% he could not find. He searched for it steadily for four months and in 1886 isolated a new element, which he named germanium. It proved to be the third of Mendeléev's predicted elements, one that he had called eka-silicon.

A great deal of RADAR research everywhere had centered on the properties of a curious class of elements known as semiconductors, so named because the conduct electricity more readily than an insulator, such as glass, but not as freely as a conductor, such as copper. In relatively pure crystalline form, germanium, showed great promise as signal detector in RADAR – a throwback to the early days of crystal radio. However, after 1945 and with the aid of a wealth of new information about semiconductors gleaned from the RADAR research effort, Bell Labs assembled a meeting of its specialists to discuss work on germanium crystals. Ma Bell was about to turn its resources loose in pursuit of a solid-state alternative to the versatile vacuum tube, and it would take only two years for the effort to bear its first fruit. In 1948, Bardeen, Brittain and Shockley announced their invention and/or discovery of the TRANSISTOR. It was the transistor in reality that inaugurated the age of the microchip. It was not simply a new sort of amplifier, but the harbinger of an entirely new sort of electronics with the capacity not just to influence an industry or a scientific discipline, but to change a culture".

In 1951 William B. Shockley (see item nos. 12) discovered that Germanium crystal containing traces of certain impurities were far better rectifiers than the crystals used a generation earlier.

DSB XIV, 447; Hanson, The New Alchemists, pp. 71 ff.; Queisser, Kristallene Krisen, pp. 85 ff.



276 WINKLER, JOHANN HEINRICH. Gedanken von den Eigenschaften, Wirkungen und Ursachen der Electricität, nebst einer Beschreibung zwo neuer Electrischer Maschinen. Illustrated by 3 engraved folding plates (numbered I, II, III). 16 unn. leaves, 168 pp. 8vo. Contemporary marbled boards.

Leipzig, Bernhard Christoph Breitkopf, 1744.

AND BOUND WITH:

WINKLER, JOHANN HEINRICH. Die Eigenschaften der Electrischen Materie und des Electrischen Feuers aus verschiedenen neuen Versuchen erkläret und, nebst etlichen neuen Maschinen zum Electrisiren, beschrieben. Illustrated by 4 engraved folding plates (numbered IV, V, VI, VII). 14 unn. leaves, 164 pp.

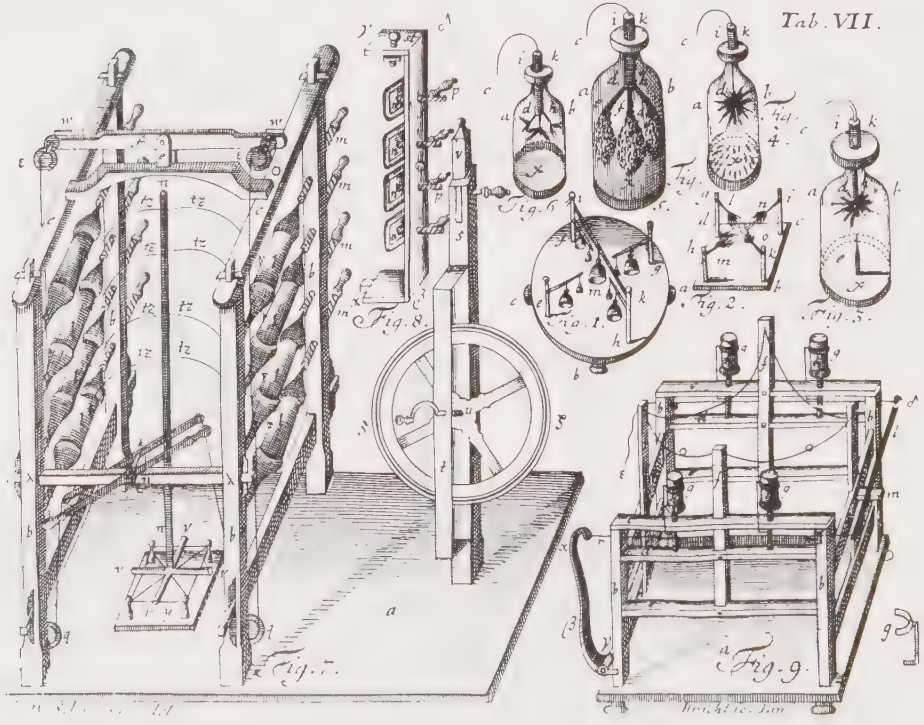
Leipzig, Breitkopf, 1745.

AND BOUND WITH:

WINKLER, JOHANN HEINRICH. Die Stärke der Electrischen Kraft des Wassers in gläsernen Gefässen, welche durch den Musschenbrökischen Versuch bekannt geworden. Illustrated by two engraved folding-out plates. 10 unn. leaves, 164 pp. 8vo. All three parts bound in comtemporary boards.

Leipzig, Breitkopf, 1746. 3600.–

FIRST EDITIONS OF THREE OF THE EARLIEST GERMAN BOOKS ON ELECTRICITY AND ELECTRIC MACHINERY AND CERTAINLY OF THE FIRST ON THE THEORY OF ELECTRICITY.



Two great innovations marked the development of the study of electricity in the early part of the fifth decade of the 18th century. While both of them were contributions to practice rather than to theory, they stimulated theory by providing a complex variety of new phenomena to challenge concepts that were inadequate. The improved „electrical machines", or electrostatic generators, and the condenser, or „Leyden Jar", made it possible to produce electrical effects on a far larger scale than had ever before been possible, thus affording the means for making wholly new types of experiments and also spectacular public demonstrations which drew considerable attention to the subject of elcectricity. These innovations came chiefly from Germany and Holland.

Concurrently with the work of Musschenbroek of Leyden, another amateur experimenter, Edward G. von Kleist, dean of the cathedral at Cammin in Pommerania, on November 4, 1745, sent an account of some significant electrical experiments he had completed to several investigators, amongst them Johann H. Winkler (1703–1770), professor at the University of Leipzig. Winkler was the first to report on Kleist's experiments in the present volume. He disclosed Kleist's device as a means for storing and delivering a very powerful electric shock. Winkler improved the Kleist Jar by winding a chain around the bottle, leading it to a metal plate and thence to the prime conductor of his multiple-globe generator. The shocks resulting from this equipment caused him convulsions, blood-agitation and fever. Winkler was the first to use a fixed cushion in the electric machine for applying friction instead of the hand, and by many is believed to have been the first to suggest the use of conductors as a means of protection against lightning.

In the concluding third part of Winkler's famous work which in fact is the earliest German encyclopedia of contemporary knowledge of electricity. The numbering of the engraved plates is continued from the previously published title of 1745.

The earliest illustrations of the Leyden Jar are found in this present volume. the charge was generated by revolving the glass globes at the left, and was transmitted to the central conductor, supported by silk cords. A wire led down through the mouth of the glass bottle partly filled with water. When the experimenter held the bottle in one hand and advanced his other and to the wire, his arms and chest formed part of the equalizing circuit and he received a very strong shock. Winkler, however, recognized the discovery priority of the Leyden Jar by Musschenbroek.

Dibner, Early Electrical Machines, pp. 24 ff.; Wheeler-Gift 335.

Cohen, Franklin and Newton, pp. 384 ff.; Dibner, Early Electrical Machines, pp. 24 ff.; Ekelöf, History of Electricity I, 20; Mottelay 162 ff.; Ronalds 547; Wheeler-Gift I, 313, 335.

– No. 277 –

277 WOLFF, CHRISTIAN JOHANN VON. Tabulae Sinuum atque Tangentium tam naturalium, quam artificialium... With a fine engraved frontispiece; titlepage in red and black. an engraved plate. 12 pp., 4 unn. leaves, 301 (+ 1 blank) pp. 8vo. Contemporary calf, gilt spine with lettering label.

Frankfurt & Leipzig, Renger, 1728. 680.–

FIRST EDITION in a well preserved copy in a nice contemporary binding.

Christian Johann von Wolff (1679–1754), born in Breslau, studied in Jena, and Leipzig and was recommended by Leipzig for the chair of mathematics and natural sciences at the University of Halle. Here Wolff lectured on mathematics and algebra, building and fortification, as well as experimental and theoretical physics. Wolff was essentially a popularizer and to some extent inspired by Leibniz. He sought to effect a formal synthesis between Scholasticism, the new mathematical methods, and more recent scientific conceptions.

Wolff was extremely influential, especially through his writings. He reinforced the German movement towards deism, determinism, and free thought, and set the major philosophical questions debated down to the time of Kant.

DSB XIV, 482 ff.

A TEXT-BOOK
ON
CRYSTAL PHYSICS

by

W. A. WOOSTER, M.A., PH.D.

Lecturer in the Department of Mineralogy and Petrology
University of Cambridge

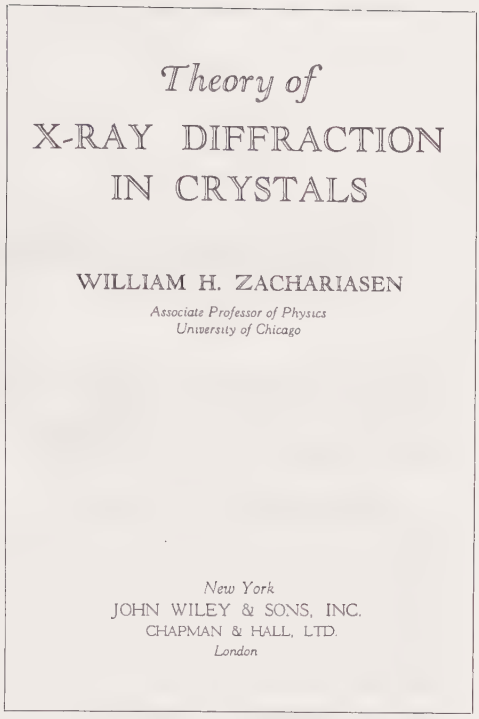
CAMBRIDGE
AT THE UNIVERSITY PRESS
1938

278 WOOSTER, WILLIAM ALFRED. A Text Book on Crystal Physics. XVII (+ 1), 295 (+ 1 blank) pp. 8vo. Original blue cloth in original dust wrappers.

Cambridge, at the University Press, 1938. 150.–

FIRST EDITION in a fine and fresh copy.

„The history of the development of crystal physics is a good example of how science develops in response to a social need. Until recently crystals were only important commercially as jewels; hence only the properties which enabled them to be distinguished from one another were of social interest – a fact which probably explains why crystal optics was almost fully worked out by the middle of last century, although the study of the other physical properties of crystals was only beginning... In 1912 a discovery was made which profoundly affected the study of crystal physics (Max von Laue and colab.) From being a scienctific curiosity crystal physics has become important to industry." (From the Introduction.) Today, the third industrial revolution is entirely based on crystals in form of the CHIP.


Theory of

X-RAY DIFFRACTION IN CRYSTALS

WILLIAM H. ZACHARIASEN

Associate Professor of Physics
University of Chicago

New York
JOHN WILEY & SONS, INC.
CHAPMAN & HALL, LTD.
London

279 ZACHARIASEN, WILLIAM H. Theory of X-Ray Diffraction in Crystals. VI, 2, 255 (+ 1 blank) pp., 8vo. Original green cloth.

New York, 1945. 220.–

FIRST EDITION in a fine fresh copy from Jakob Ackeret's library and to which are added two additional papers in their offprint form

1. Die Kristallstruktur der A-Modifikation von den Sesquioxyden der seltenen Erdmetalle. Offprint from „Ztschr. f. physik. Chemie vol. 123". 18 pp. 1926.
2. Die Kristallstrukturen von Berylliumoxyd und Berylliumsulfid. Offprint from same journal, vol. 119, 1926.

The first of the two additional papers bears *Arnold Sommerfeld's* pencilled autograph on the titlepage.

280 ZEUTHEN, HIERONYMUS GEORG. Lehrbuch der abzählenden Methoden der Geometrie. Mit 38 Figuren im Text. XII, 394 pp. 8vo. Original green cloth, gilt lettering.

Leipzig & Berlin, Teubner, 1914. 220.–

FIRST EDITION in a well preserved copy.

Hieronymus G. Zeuthen (1839–1920) was professor of mathematics at Copenhagen University. He had studied at his native university and completed his training under Chasles at Paris whose lead he followed in his own work on enumerative methods in geometry. The first decade of Zeuthen's scientific activity was devoted entirely to enumerative methods in geometry. A summary of this work is the present volume.

DSB XIV, 618 ff.; Coolidge, A History of Geometrical Methods, pp. 194.

Samstag, 15. November 1986 – Seite 11

Liechtensteiner Volksblatt

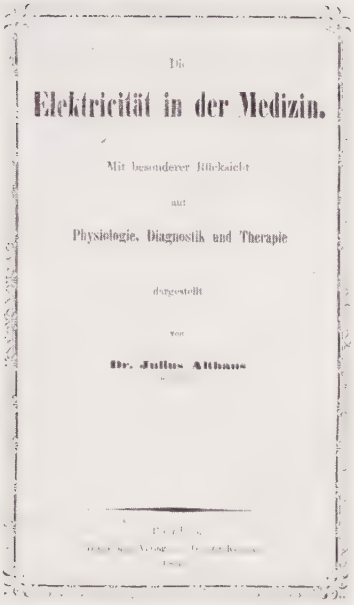
Denkende Computer im nächsten Jahrzehnt?

b6 Bonn (AP) Die Anwendung neuester wissenschaftlicher Erkenntnisse über die Arbeitsweise des menschlichen Gehirns auf Aufbau und innere Organisation modernster Rechner könnte den Industrienationen schon im nächsten Jahrzehnt selbständig "denkende" Computer bescheren. Dies geht aus einer Mitteilung des deutschen Bundesforschungsministeriums vom Freitag hervor, in dem über ein Fachgespräch zu diesem Thema berichtet wird.

In der Mitteilung ist die Rede von einer "fundamentalen Revolution" mit unabsehbaren Konsequenzen. Sie wird dieser Darstellung zufolge ermöglicht durch sogenannte parallele Rechner. Diese neue Computer-Generation arbeitet nicht mehr stur einen Befehl nach dem anderen ab. Sie ist vielmehr in der Lage, komplizierteste Aufgaben in Teilaufgaben zu zerlegen und an hunderte von "Unter-Rechnern" zur gleichzeitigen und parallelen Bearbeitung zu verteilen, deren Ergebnisse "einzusammeln" und daraus das Endergebnis zu formulieren.

PART II

THE LIVING BRAIN – A SELECTION OF BOOKS ON NEUROLOGY


Die

Elektricität in der Medizin.

Mit besonderer Rücksicht

auf

Physiologie, Diagnostik und Therapie

dargestellt

von

Dr. Julius Althaus

First to Employ Electrolysis for Medical Purposes

280A. ALTHAUS, JULIUS. Die Elektricität in der Medizin. Mit besonderer Rücksicht auf Physiologie, Diagnostik und Therapie. XVI, 336 pp. Tall-8vo. Original green printed wrappers.

Berlin, Reimer, 1860. 250.–

FIRST EDITION in a fine and fresh copy, entirely unopened and uncut.

Julius Althaus (1833–1900) having studied at Berlin, Wien and Paris, practised medicine in London and was the first to employ electrolysis for medical purposes. This was reported seven years later in 1867. In the present volume, however, Althaus surveys contemporary research on electricity in medicine, the work of his contemporaries as well his own work and experiences gathered in his London practise.

cf. Garrison-Morton 1996. 2; Hirsch-Hübotter I, 104.

281 ARNEMANN, JUSTUS. Versuche über das Gehirn und Rückemark. Illustrated by a charming engraved title-vignette und seven large folding-out engraved plates by the author himself, contemporary colouring. XII, 4, 208 pp., 4 unn. leaves (the last is a blank leaf). 8vo. Nicely bound in modern red calf, gilt lettering.

Göttingen, Johann Chr. Dieterich, 1787. 1850.–

FIRST EDTION in a well preserved, uncut copy with wide margins. Printed on strong paper.

Justus Arnemann (1763–1806), professor of medicine in Göttingen and a great experimentor in vivo, a gifted and respected university teacher, he ran into serious financial difficulties, had to leave Göttingen in a foggy night and practised medicine in Hamburg until is early suicidal death. A prolific author of a great number of publications on surgery, ophthalmology and pharmacy he even founded a journal. Many of the treatises he publishes went through a number of editions; the one present here, however, was published only once and that may be the reason that one hardly ever finds it on the shelves in the catalogues of the antiquarian.

The „Experiments on the Brain and the Spinal Cord" are based on his researches on living animals like dogs, sheep, rabbits, pigeons and chicken. „Er hat die Histologie der Nerven und Ganglien durch seine Beobachtungen über die Regeneration gestörter Teile am lebenden Körper wesentlich gefördert" (Hirsch-Hübotter I, 206 ff.)

ADB I, 553; Haeser II, 683; Not listed in Blake, Waller, Wellcome, Haymaker-Schiller, Cushing's great collection did not have a copy!

Juſtus Arnemann
der Medicin Doktor

Verſuche
über das

Gehirn
und

Rückenmark.

Mit VII Kupfertafeln.

Göttingen,
bey Johann Chriſtian Dieterich,
1787.

282 BEKHTEREV, VLADIMIR MIKHAILOVICH. Die Leitungsbahnen im Gehirn und Rückenmark. Uebersetzt unter Mitwirkung des Verfassers von J. Weinberg. Illustrated by a lithographed colored plate and 16 illustrations in the text. XII, 210 pp. Tall-8vo. Contemporary cloth, spine renewed.

Leipzig, Ed. Besold, 1894. $ 850.–

FIRST GERMAN EDITION and also an original edition because of Bekhterev's additional material to this edition. A fresh copy.

Originally published in Russian in 1877–78, this fundamental work by the great Russian scientist was not available in a western language before. Later in 1896–1898 it was extended into a two volume treatise (see my *Bibliotheca Medica IV*, 178) which as far as I could make out has never been translated into a western language. By the highest standards of the time, so rich in neurological classics, this was a capital work based on experimental treatment of the anatomy of the nervous system, and is still usefule as a reference book for anatomical information of more than historical interest. To this day this work of Bekhterev remains on a par with the contemporary work of a Djerne, Van Gehuchten, and Cajal.

Among many subsequent contributions, the first descriptions of the central tegmental tract, the connections of the inferior olive, the component fibers of the cerebellar peduncles, and the nuclear complexes in the reticular formation of the tegmentum were made by Bekhterev.

Vladimir Mikhailovich Bekhterev (1857–1927) represented a coryphaen figure in the history of neurology at the turn of the century. Contemporary and lifelong friend of Pavlov, he was a clinician, a widely sought practicioner, an anatomist, physiologist, experimental psychologist, and at the same time, a man prominent in public life.

Haymaker-Schiller, Founders of Neurology, 167 ff.; DSB I, 579 ff.; Percival Bailey Collection, No. 50.

Die

Leitungsbahnen

im

Gehirn und Rückenmark.

Von

W. von Bechterew,

o. ö. Professor an der Universität Kasan

Mit 16 Textabbildungen und einer lithographischen Tafel.

Übersetzt unter Mitwirkung des Verfassers

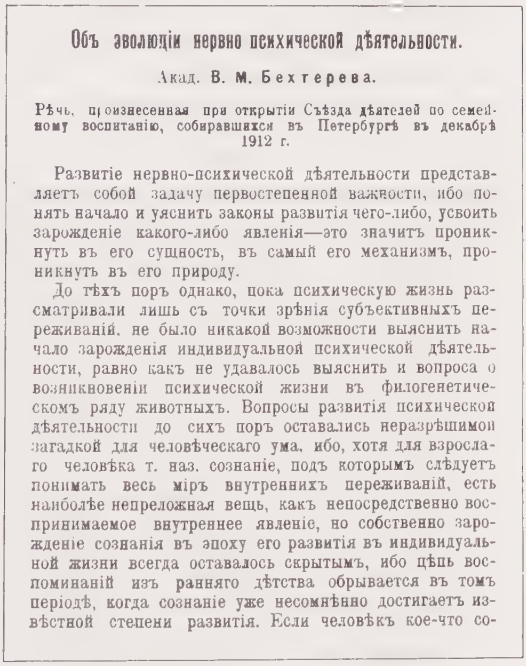
von

Doctorand J. Weinberg in Jurjew-Dorpat.

Leipzig

Verlag von Eduard Besold (Arthur Georgi)

1894.



Объ эволюціи нервно психической дѣятельности.

Акад. В. М. Бехтерева.

Рѣчь, произнесенная при открытіи Съѣзда дѣятелей по семейному воспитанію, собиравшихся въ Петербургѣ въ декабрѣ 1912 г.

Развитіе нервно-психической дѣятельности представляетъ собой задачу первостепенной важности, ибо понять начало и уяснить законы развитія чего-либо, усвоить зарожденіе какого-либо явленія—это значитъ проникнуть въ его сущность, въ самый его механизмъ, проникнуть въ его природу.

До тѣхъ поръ однако, пока психическую жизнь разсматривали лишь съ точки зрѣнія субъективныхъ переживаній, не было никакой возможности выяснить начало зарожденія индивидуальной психической дѣятельности, равно какъ не удавалось выяснить и вопроса о возникновеніи психической жизни въ филогенетическомъ ряду животныхъ. Вопросы развитія психической дѣятельности до сихъ поръ оставались неразрѣшимой загадкой для человѣческаго ума, ибо, хотя для взрослаго человѣка т. наз. сознаніе, подъ которымъ слѣдуетъ понимать весь міръ внутреннихъ переживаній, есть наиболѣе непреложная вещь, какъ непосредственно воспринимаемое внутреннее явленіе, но собственно зарожденіе сознанія въ эпоху его развитія въ индивидуальной жизни всегда оставалось скрытымъ, ибо дѣтъ воспоминаній изъ ранняго дѣтства обрывается въ томъ періодѣ, когда сознаніе уже несомнѣнно достигаетъ извѣстной степени развитія. Если человѣкъ кое-что со-

– No. 282 –

– No. 283 –

283 BEKHTEREV, VLADIMIR MIKHAILOVICH. Ob evolyutsij nervno-psikhitseskoi deyatelnosti (On the Evolution of Neuro-Psychic Activity). 33 (+ 1 blank) pp. 8vo. Original printed wrappers.

St. Petersburg, „Ja Trei" Publishers, 1913. $ 150.–

FIRST EDITION in a good copy.

The years from 1906 to the revolution of 1917 encompass the third phase of Bekhterev's scientific activity, and this period may be called psychoneurological and sociological. Extremely popular with students, liberal elements of the intelligentsia, and the democratic press, Bekhterev became an important public figure as well as an illustrious savant with an international reputation. In no other country has such a reputation counted higher in public esteem than in Russia. And so his prestige grew he was looked upon with increasing suspicion by conservative academic and governmental circles. This may have accounted for the fact that in 1913, after 35 years of service, his faculty appointment at the Military Medical Academy was not renewed and he was retired as emeritus at the age of 56.

The upper margin of the first leave has been cut off by some barbarian presumably to eliminate previous owner's name.

An Important Work

284 BERTHOLON, PIERRE NICOLE. De l'électricité du Corps Humain dans l'état de santé et de maladie. XII, 541, 3 pages. 8vo. Fine contemporary full brown calf, richly gilt decorated spine with red lettering, label.

Paris, Didot le jeune, 1780. 1400.–

FIRST EDITION. A fine fresh copy of this important treatise.

Pierre N. Bertholon (1741–1800) was professor of physics in Montpellier and Lyons. His scientific contributions are important both qualitativly and quantitavely, especially those in electricity. He played the same role in the South of France that the Abbé Nollet played in Paris.

In the present work Bertholon classifies all ailments according to their positive or negative electrical reactions. Appropriate therapy is advised for each: positive or negative electricity, electric baths, aigrettes, electric sparks, electric shock, or impressions de souffle. „When the face, the back of the hand, or another part of the body the sensitivity of which is not too weakend by touch is brought near an electrified conductor, there is felt the impression of a fresh breeze, of a light breath, or of a cobweb."

Wheeler-Gift No. 533 (only second edition of 1786); Mottelay p. 258–9; DSB II, 82–3.

On Coffee, Tea, Koka, Opium, Hashish, Tobacco, Betel, Arsenik etc.

285 BIBRA, ERNST VON. Die narkotischen Genussmittel und der Mensch. VI, 2, 398, 2 pp. Tall-8vo. Contemporary fine half morocco, gilt decorated spine.

Nürnberg, Wm. Schmid, 1855. 1200.–

FIRST EDITION in a very well preserved copy!

Ernst von Bibra (1806–1878) one of the pioneers in the history of the beginnings of surgical anaesthesia in Germany, in collaboration with Emil Harless, he was the author of „Die Wirkung des Schwefeläthers in chemischer und physiologischer Beziehung" (1847). Interesting von Bibra's statistics given in the introduction in which he maintains that

100 million people are coffee consumers
300 million eat and smoke hashish
400 million use opium
500 million people drink chinese tea

and almost all known people of the world are addicted to tobacco. He concludes „Es steht zu hoffen, dass die physiologische Chemie sich bald energisch dieses Feldes bemächtigen wird, auf welchem Spielraum zu den interessantesten Forschungen gegeben ist, und nur durch diese Wissenschaft wird es möglich sein, wenigstens einen Teil jener, häufig so rätselhafter Erscheinungen zu erklären, welche täglich vor unseren Augen vorgehen, und welchen man merkwürdiger Weise erst seit einigen Jahren eine grössere Aufmerksamkeit geschenkt hat ... Ohne Narcotica aber kann der Mensch

leben. Durch ihren Genuss aber wird die Existenz eine glücklichere und sie sind deshalb zu billigen ... Aber das Opium in China? Freilich hat es bis jetzt den Anschein, als ob es einer schmutzigen Gewinnsucht gelingen würde, ein armes, halb kultiviertes Volk moralisch und physisch zu Grunde zu richten, aber warten wir ein Decenium ab und sehen wir, wie sich dann jene Verhältnisse gestaltet haben..." (pp. III, 397).

Arents Collection 1597a; Mueller, Kaffee, 20.

286 BRENNER, RUDOLF. Untersuchungen und Beobachtungen auf dem Gebiete der Elektrotherapie. 4 parts in 2 volumes bound in one. Illustrated with 5 lithographed plates of which 4 are coloured. XVI, 263 pages; XII, 2, 332, 4 pages. Large 8vo. Contemporary half calf.

Leipzig, Giesecke & Devrient, 1868–1869. 1200.–

FIRST EDITION in a well preserved copy. One of the most comprehensive nineteenth century works on elektrotherapy.

Rudolf Brenner (1821–1884) studied medicine in Halle and became a general practicioner before he went to Russia as surgeon in the Crimean war and in Russian services. He later opened in the Crimean war and in Russian services. He later opened a very successful practice in St. Petersburg, and was consultant in electrotherapy to the Maximilian Hospital there. Through his very capable demonstrations of the subject and his numerous contribution issued in various medical journals he did much to advance his science. Noteworthy his important contributions to neurology of the galvanic reaction of the nervous hearing apparatus.

Hirsch-Hübotter I, pages 690–91.

A Founder of Neurology – Inscribed Copy

287 BRODMAN, KORBINIAN. Neue Forschungsergebnisse der Grosshirnrindenanatomie mit besonderer Berücksichtigung anthropologischer Fragen. 43 (+ 1 blank) pp. 8vo. Original green printed wrapper bound in protective cloth.

Leipzig, Pries, 1913. 625.–

FIRST EDITION. Offprint from the „Verhandlungen der Gesellschaft Deutscher Naturforscher und Aerzte". On the wrapper the author's penned inscription. „Mit d(en). besten Wünschen z(um). Neujahr!" Stamped. „Ueberreicht vom Verfasser".

Korbinian Brodmann (1868–1918) studied medicine in München, Würzburg, Berlin and Freiburg/Br. In Frankfurt he came into contact with Alzheimer. It was under this influence that he became interested in the anatomical problems which were to occupy him exclusively for the remainder of his life. In a series of papers, of which the present is the culmination, Brodmann established the basis upon which the present-day science of comparative cytoarchitectonics of the mammalian cortex rests. Brodmann's broad comparative-anatomic approach his recognition that the cortex is organized anatomically along the same basic principles in all mammals, and his ideas of utilizing the morphogenesis of the cortex as a basis for the classification of cortical types and for the nomenclature of the layers, were all instrumental in despelling the almost hopeless confusion which existed before Brodmann entered the field.

Haymaker & Schiller, Founders of Neurology, pp. 99–101; cf. Garrison-Morton 1434, 1435.

First Photographic Illustrations in Neuroanatomy
First Attempt at Publishing Photographic Medical Book in America
One of the Few Original Copies Known

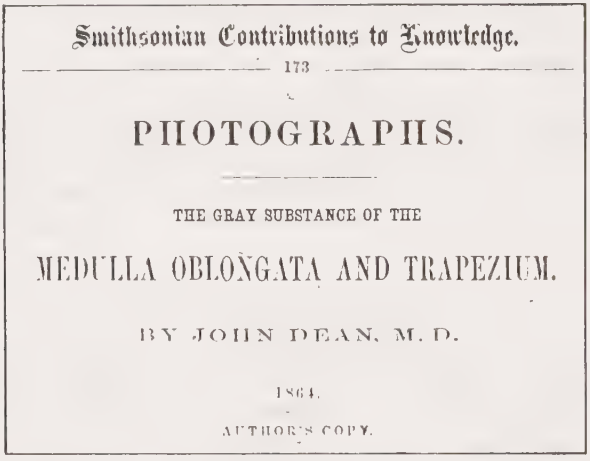
288 DEAN, JOHN. Photographs. The Gray Substance of the Medulla Oblongata and Trapezium. Original Portfolio containing nine (9) cards each with four (4), i. e. 36, circular mounted original micro-photographs 8,5 cm. in diameter. 4to. Preserved in the original portfolio, cloth spine, printed label on front cover, original ties intact.

(Washington), Smithonian, 1864. 3500.–

FIRST & ORIGINAL ISSUE AND EDITION and one of the few made for the personal use of the author who stated in the preface of the text (which is present here in a photocopy): „A limited number of photographic prints from the original negativs have been prepared by myself for private distribution..." The photolithographs of the official edition are of minor quality.

John Dean M. D. (1831–1888) was the pioneer in American microscopic studies of the structure of the central nervous system and stood among the first workers of the world in that then little investigated science. His „Gray Substance of the Medulla Oblongata and Trapezium" made his reputation as a neuroanatomist, a speciality which in America, at least, was entirely new at that time. Back to the preface of his pioneering work, John Dean comments:

> „The principal object in view has been to give the entire topography of the medulla oblongata and trapezium, with illustrations from a series of photgraphs, the negatives of which have been prepared solely by myself, and have in no case received any retouching. Over two years of constant study have been devoted solely to this investigation..."



Smithsonian Contributions to Knowledge.

173

PHOTOGRAPHS.

THE GRAY SUBSTANCE OF THE

MEDULLA OBLONGATA AND TRAPEZIUM.

BY JOHN DEAN, M. D.

1864.

AUTHOR'S COPY.

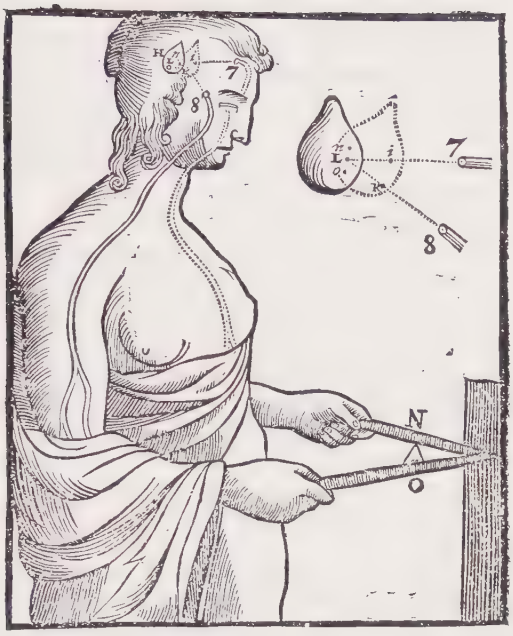
Dean's study preceeded by four years Buckminster Brown's „Cases of Orthopedic Surgery (1868)" which is generally considered to be the first American medical book illustrated photographically and through the use of actual mounted photographs. The same goes for Hardy & Montméja's „Clinique photographique de l'Hôpital Saint-Louis" (1868; please see my *Bibliotheca Medica II*, 276, item 211), generally considered to be the first photographic atlas of dermatology and one of the first medical books to have been illustrated by actual photographs.

The photographs made by John Dean are much finer and more detailed, and, additionally, having relevance to the structure of nervous tissue, were a forerunner of great things to come. His photographs were highly praised by Oliver Wendell Holmes:

> „Of all the microphotographs we have seen, those made by Dr. John Dean, of Boston, are the most remarkable for the light they throw on the minute structure of the body. The sections made by Dr. Dean are in themselves very beautiful specimens ... when the enlarged image is suffered to delineate itself, as in Dr. Dean's views of the medulla oblongata, there is no room to question the exactness of the portraiture, and the distant student is able to form his own opinion as the original observer. These later achievements of Dr. Dean have excited much attention here and in Europe, and point to a new epoch of anatomical and physiological delineation."

Dean's work has escaped the attention of most medical authorities consulted (Cushing, Bailey, Waller, Wellcome, Haymaker-Schiller's and their „Founders of Neurology",Garrison's History of Neurology, etc etc.) and is neither mentioned by the guild of photographic historians: Eder, Baier, Truthful Lens e. a.

Published as „Smithonian Contributions to Knowledge, 173"; a well preserved copy of what I believe to be an extremely rare original publication. – Burns, Early Medical Photography in America, 1984, pp. 1229 & 1248.



A University in Nine Volumes

289 DESCARTES, RENÉ. (Opera Omnia:) Opera philosophia, 3 voll. – Geometrie, 2 voll. – Epistolae, 3 voll. – Opuscula posthuma, physica et mathematica, 1 vol. – Together 9 volumes. Illustrated by numerous woodcuts in the text. Small-4to. Contemporary full vellum, red spine lettering labels.

Frankfurt, F. Knoch, 1692 & Amsterdam, Blaeu, 1704. 3400.–

EARLY EDITION of the works of René Descartes as they were known at the end of his century. A very well preserved set in fine contemporary and uniform bindings.

The collection contains in the „Philosophical Works" (1) Vitae Renati Descartes; (2) Principia philosophiae: seu dissertatio de methodo; (3) Dioptrice et meteora; (4) Passiones animae (5) Tractatus de homine et de formatione foetus (6) Principia Matheseos universalis; (7) La géométrie; (8) Musicae compendium; (9–11) Epistolae omnes; (12) Opuscula posthuma: Dissertatione de lumine, Tractatus de mechanica, elucidationes de Poisson, Regulae ad directionem ingenii, Prima cogitationes, Animalium, Excerpta.

The 17th century was a period which probably will ever remain resplendent in the history of science, for truly, no century starting from so little achieved so much. In this scientific renaissance, Descartes marks the transition from the ancient to the modern. During the three centuries that have elapsed since his death, Descartes' philosophical speculations have not failed to attract the notice of many distinguished writers. They exerted a profound influence upon 17th century thought. His name will always be associated with his legacy to mathematics, his contributionss to the study of equations have earned him lasting fame. Descartes' contributions to the science of optics were considerable, and they prepared the way for the brilliant discoveries of his successors. The „L'Homme" is largely regarded as the first European textbook in physiology. Descartes great work „Discours de la Méthode", which was first published in 1637 and which fetches today astronomical prices whenever it turns up on the market, it exerted the greatest influence in subsequent philosophical thought and is the basis of the method of modern science.

Here is a chance to get all these important publications united in a contemporarely bound set in nice condition.

Cf. PMM 129; Dibner, Herolds of Science, 81; Horblit, 100 Books Famous in Science, 24 etc. etc.

290 (FERRARI, GERONIMO CALLED FORTUNATUS). Philosophia sensuum mechanica methodic tractata atque ad usus academicos accommodata. Editio altera, ab Auctore recognita, & rerum Indice aucta. 2 volumes in four parts bound in 4 volumes. Illustrated with 25 large engraved folding plates. I: XV, 1, 498 pp., 1 blank leaf; II: VII, 364 pp.; III: VIII, 427, 1 (blank) pp.; IV: VIII, 483, 1 (blank) pp. 4to. Contemporary full brown calf, spine labels.

Brixen, J. M. Rizzardi, 1751–1752. 1200.–

A WELL PRESERVED SET of a standard text-book at the time. It was first published in 1735, a second edition was already necessary in 1745–48 and which went out of print within only three years after publication.

Geronimo Ferrari (1701–1754), called Fortunat of Brescia, was professor of mathematics and philosophy at the Franciscan convent at Brescia (Brixen). He published several other treatise on mathematics and as secretary to the general of his order went finally to Spain where he also died.

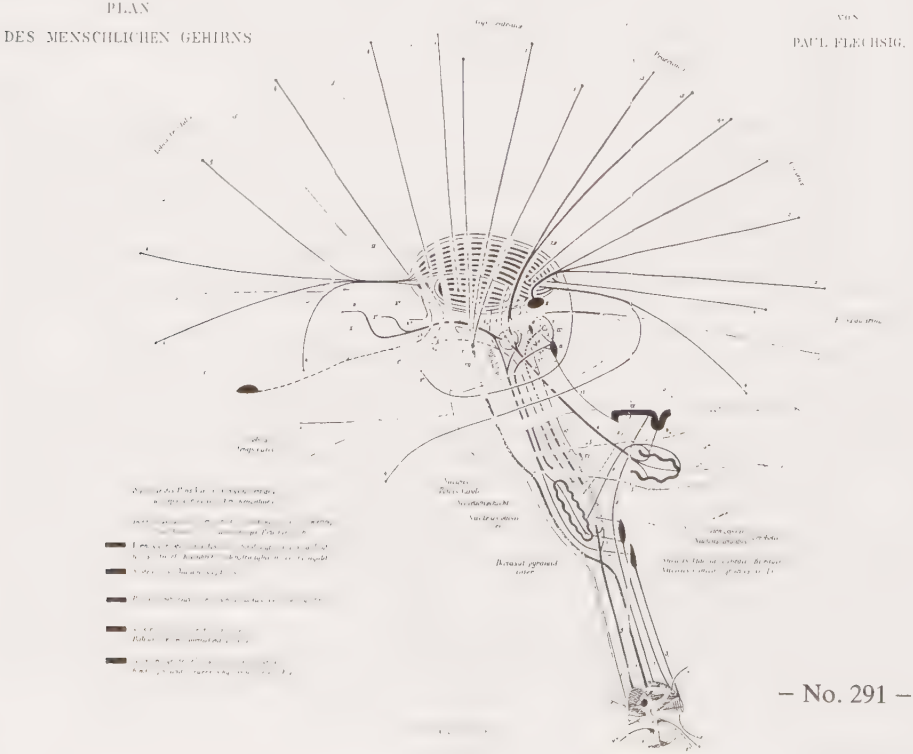
The first part of the first volume deals with physical bodies in general and their natural principles and properties. Towards the end of that volume there are paragraphs on the *nature of light, vision and colours* including a discussion of NEWTON'S THEORY OF OPTICS, etc. etc.

The second part of the first volume contains chapters on the movement of the earth, meteorology, athmosphere, meteors etc. Also plants and plant life, plant nutrition; animals and their senses, nerfs, *circulation of the blood* etc etc.

The first part of the second volume is dedicated to the discussion of the heavenly bodies, astronomy etc. whilst the concluding second part contains the treatment of gravitation incl. DE *NEWTONIANA* CORPORUM OMNIUM IN SE INVICEM GRAVITATIONE; DE CAUSA SUSPENSIONIS MERCURII IN TUBIS *TORRICELLIANIS* UBI DE AERIS PONDERE, & AEQUILIBRIA, etc. etc.

Bindings a little rubbed but still sound and firm, inside spotten clean on crisp paper.

Poggendorff I, 737; Riccardi I, 189.



– No. 291 –

Pioneering Work in Brain Research

291 FLECHSIG, PAUL. Plan des menschlichen Gehirns. Auf Grund eigener Untersuchungen entworfen. Illustrated by a large folding-out coloured plate. VIII, 44 pp. 8vo. Contemporary green gloth, gilt lettering on spine.

Leipzig, Veit & Co., 1883. 450.–

FIRST EDITION in a well preserved copy.

Paul Emil Flechsig (1847–1929), a pioneer histologist and professor of psychiatry at Leipzig, named the anterior and posterior limb and knee of the internal capsule, the dorsal spinocerebellar tract (Flechsig's tract). Flechsig opened an asylum (Irrenklinik) and soon students from all over the world gathered around him: Beevor, Bekhterev, Darkschewitsch, Schütz, Vogt and many others. Flechsig had an understandable aversion to socialism; on one occasion, on peering at the brain of a wellknown socialist which had just been removed by him at autopsy. Flechsig remarked: „My! what dysharmonic convolutions!"

Haymaker & Schiller, Founders of Neurology, pp. 23–28; Cushing F 183; DSB V, 26 ff.; Garrison, History of Neurology, pp. 174 ff.; Thomas & Cooper, Catalogue of the Courville Collection, No. 729.

Hypnotism
Collection of 32 Original Papers – Most of them Presentation Copies
Bound in 4 Volumes

292 FOREL, AUGUSTE. – Four stout volumes, large 8vo. Bound at the time in private half cloth with hand written spine lettering labels by Auguste Forel, with his printed exlibris inside front covers and his *autographed ex-libris* on nearly each paper as well as his autographed index in each one of the four volumes; original printed wrappers preserved.

The four volumes, contents described below, are offered for as a collection.

I, 1. A.-A. LIEBAULT. Etude sur le zoomagnetisme. 29,1 pp. Paris & Nancy, 1883.

2. CHAZARAIN & CH. DÉCLE. Les courants de la polarité dans l'aimant et dans le corps humain. Lois des actions des courants etc. Base scientifique de l'emploi de l'électricité. With 118 illustrations. 4, 99, 1 pp. Paris, 1887.

With presentation inscription by Chazarain on the title page.

3.–6. REVUE DE L'HYPNOTISME. Issues of 1st July 1888; 1st August 1888; 1st April 1889; 1st August 1889.

Including papers by Bérillon, Liégeois, Copin, Emile Yung, and Forel.

7. E. BÉRILLON. La Suggestion. Ses applications a la pédiatrie et a l'éducation mentale des enfants vicieux ou dégénérés. 2e éd. 24 pp.

Paris, 1890.

8. YUNG, EMILE. Hypnotisme et spiritisme (les faits positifs et les faits présumés). 174 pp.

Genève, 1890.

With presentation inscription by the author on the title-page.

II, 1. DELBOEUF, J. L'affaire des magnétiseurs de Braine-le-Chateau. Examen critique du rapport des Médicins experts. 8 pp.

Liège, 1891.

2. DELBOEUF, J. Comme quois il n'y a pas d'hypnotisme. Paperclippings from a Liège daily, name not identified, 3 cols. ca. 1891.

3. DECROIX, E. Le Tabac devant l'hypnotisme et la suggestion. 20, 2 pp.

Paris, 1888.

[With author's presentation inscription on title--page.

4. MASOIN. Les paysans magnétiseurs de Braine-le-Chateau devant la justice. 24 pp.

Bruxelles, 1891.

With author's presentation inscription on wrappers.

5. DELBOEUF, J. Théorie générale de la sensibilité. 4, 108 pp. Bruxelles, 1876.

With author's presentation inscription on wrappers.

6. BABINSKI, J. Hypnotisme et hystérie du rôle de l'hypnotisme en thérapeutique. Leçon faite à la Salpêtrière ... 43, 1 pp.

Paris, 1891.

Author's presentation copy.

7. LIENGME, G. Contribution a l'étude de l'hypnotisme et de la suggestion thérapeutique. Thèse de doctorat ... 99, 1 pp.

Neuchâtel, 1890.

With author's presentation inscription on wrapper.

8. LEBBÉ, R. Projet de loi sur les hypnotiseurs et leurs sujets automatiques. 39, 1 pp.

Paris, 1891.

With author's presentation inscription on half title.

9. MORSELLI, E. Contributo critico-sperimentale alla fisiopsicologia della suggestione. sui fenomeni di credulità ... 30, 1 pp.

Milano, 1890.

With author's presentation inscription on half title.

10. SEPPILLI, G. La terapeutica sugestiva delle malattie mentali. 27, 1 pp.

Milano, 1890.

With author's presentation inscription on title page.

11. SCHRENCK-NOTZING, VON. Experimental Studies in Thought-Transference. With 8 plates. 20 pp.

London, 1891.

With author's presentation inscription on wrapper.

12. OSGOOD, H. Outsome of Personal Experience in the Application of Hypnotism and Hypnotic Suggestion. 26 pp.

Boston, 1891.

With author's presentation inscription on wrapper.

III, 1. DELBOEUF, J. L'hypnotisme et la liberté des représentations publiques. Lettres à M. le Professeur *Thiriar* ... 112 pp.

Liège, 1888.

With author's present. inscr. on half title.

2. DELBOEUF, J. Le magnétisme animal. A propos d'une visite a l'Ecole de Nancy. 128 pp.

Paris, 1889.

3. DELBOEUF, J. Magnétiseurs et Médecins. 115, 1 pp.

Paris, 1890.

With author's present. inscription on half title.

4. DELBOEUF, J. De la Nature psychologique de l'hypnotisme. 7 pp.
Ca. 1890.

5. DELBOEUF, J. – J.-P. NUEL – LEPLAT. De l'étendue de l'action curative de l'hynpotisme. L'hypnotisme appliqué aux altérations de l'organe visuel. With a large folding plate. 32 pp.
Paris, 1890.
With author's present. inscription on title-page.

IV, 1. HECKER, E. Hypnose und Suggestion im Dienste der Heilkunde. 38 pp.
Wiesbaden, 1893.
With author's presentation inscription on wrapper.

2. SCHRENCK-NOTZING, VON. Ein Beitrag zur psychischen und suggestiven Behandlung der Neurasthenie. 4, 48 pp.
Berlin, 1894.
With author's presentation inscription on wrapper.

3. BINSWANGER, ROBERT. Ueber die Erfolge der Suggestiv-Therapie. 16 pp.
Wiesbaden, 1892.
With author's present. inscript. on wrapper.

4. MOLL, A. Der Rapport in der Hypnose. Untersuchungen über den thierischen Magnetismus, 4, 237 pp.
Leipzig, 1892.

5. SCHAFFER, K. Suggestion und Reflex. Eine kritisch-experimentelle Studie über die Reflexphaenomene des Hypnotismus. With 6 photographic plates and 11 illustrations in the text. IV, 113, 3 pp.
Jena, 1895.
With author's present. inscription on title page.

6. KRAFFT-EBING, R. VON. Hypnotische Experimente. 38 pp.
Stuttgart, 1893.

7. HAAS, L. Über Hypnotismus und Suggestion. Eine orientierende Studie. 92 pp.
Augsburg, 1894. The Collection: 2800.–

... Much More Elaborate Than Any Previous Attempt...

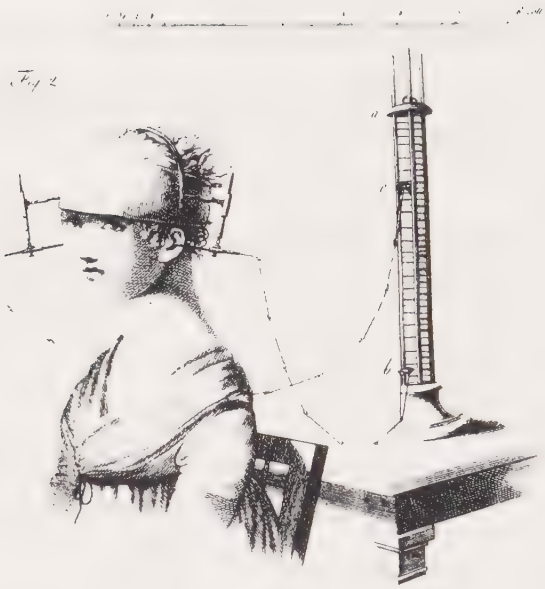
293 GALVANI. – ALDINI, GIOVANNI. Essai théorique et expérimentale sur le Galvanisme, avec une série d'éxpériences. Illustrated by ten large folding plates. 6, X, 398 pp. 4to. Contemporary (and probably original) marbled wrappers neatly preserved in a protective cloth case.
Paris, Fournier, 1804. 8600.–

FIRST EDITION in a very fine and fresh copy, entirely uncut.

This massive quarto volume of some 400 pages proved to be Aldini's final attempt to secure notoriety from popular exposition of Galvanism. It is well printed in sumptuous format, and his much more elaborate than any previous publication on the subject.

The ten fine engraved folding plates illustrate many of the olf experiments, but also much of the spectacular addition made after Galvani's death, malefactors' bodies, cows' heads, etc. under stimulation from a voltaic pile. These somewhat macabre experiments are thought to have been the *first use of the galvanic current on a human corpse.*

Not listed by Wheeler-Gift; Graesse I, 65; Fulton, A Bibliographical Study of the Galvani and the Aldini Writings on Animal Electricity in: Annals of Science I, no. 3, p. 239 ff.



Purkyne's Pupil Valentin's Copy

294 GRAPENGIESSER, CARL JOHANN CHRISTIAN. Versuche den Galvanismus zur Heilung einiger Krankheiten anzuwenden. Illustrated by 2 engraved folding plates. 1 unn. leaf, IV, 256 pp. 8vo. Original yellow printed wrappers bound in contemporary boards.

Berlin, Mylius, 1801. 2200.–

FIRST EDITION of a very scarce volume by the personal physician to the Prussian Crown Prince. On the titlepage the penned exlibris „Valentin", the famous Purkyne's favorite pupil.

Carl Johann Christian Grapengiesser (1773–1813), the gifted scientist, was also consulting physician to the King of Prussia. During the campaign against Napoleon, Grapengiesser caught typhus and he died all to young in 1813. His book met an immediate demand and was sold out within weeks; a second edition appeared already a year later in 1802.

Valentin was befriended with *Alexander von Humboldt* and that may account for his interest in galvanism. For Humboldt's contribution to the matter, *please see item no. ...*

A well preserved and fresh copy.

Hirsch-Hübotter II, 832 ff.; Mottelay 269, 325, 330, 332; Ronalds 208; Bibl. Waller I, 3702.

295 GREY, RICHARD. Memoria Technica: or, a New Method of Artificial Memory, applied to, and exemplified in Chronology, History, Geography, Astronomy. The Third Edition, Corrected and Improved. Titlepage printed in red and black. 4, XVI, 8, 160, 28 pp. 8vo. Contemporary full calf, gilt line decorations on covers and spine, red spine label.

London, John Stagg, 1737. 485.–

WELL PRESERVED COPY, fresh and clean, of this very popular standard work which was first published in 1730 and soon was reprinted over and over again up to the year 1830!

Young, Bibliography of Memory, pp. 140–142.

Über die Funktion der rechten Hirnhemisphäre im Verhältnis zu der linken, in bezug auf Sprache, Musik und Rechnen.

Von

S. E. Henschen,

Professor emerit. der Medizin, Stockholm.

Die topistisch-pathoarchitektonische Forschung in der Psychiatrie.

Von

Cécile Vogt.

Beitrag zur Kenntnis der Neuroglia des Groß- und Kleinhirns bei der progressiven Paralyse mit einigen technischen Bemerkungen zur Silberimprägnation des pathologischen Nervengewebes.

Von

S. R. Cajal.

The Bechterev Festschrift

296 HENSCHEN, SALOMON EBERHARD. Ueber die Funktion der rechten Hirnhemisphäre im Verhältnis zu der linken, in bezug auf Sprache, Musik und Rechnen. 16 pp. in: Zeitschrift für die gesamte Neurologie und Psychiatrie, volume 100, the Bechterev-Festschrift. Tall-8vo. Contemporary half cloth, gilt decorated spine.

Berlin, 1926. 1200.–

FIRST EDITION of an eminent paper by the great pioneer in neurology who in 1888 discoverred the cortical visual center. A pupil of Key, Retzius, Ludwig and Ziemsen, he became professor of medicine and chief of the clinic for internal diseases in Upsala. His international reputation was such that in 1923 he was called to Moscow to see the 52-year old Lenin, stricken with aphasia and other signs of cerebral disease, but Hensche alone was correct that the disorder would be rapidly progressive. This highly interesting jubilee-volume contains besides a fine portrait of Bechterev dozens of papers by the leading neurologists and psychiatrists of the period: Cécil Vogt, Ramón-y-Cajal, von Economo, Morgenthaler, etc. etc.

Cf. Garrison-Morton 1521; Haymaker-Schiller, Founders of Neurology, pp. 333 ff.

An Electric Nobleman

297 HERBERT, JOSEPH EDLER VON. Theoriae phaenomenorum electricarum quae seu electricitatis ex redundante corpore in deficiens traiectu, seu sola atmosphaerae electricae actione cignuntur Editio altera aucta et emendata.

Illustrated by 6 large engraved folding plates. 12 unn. leaves, 246 pp., final blank leaf. Tall-8vo. Fine contemporary full brown calf, richly gilt decorated spine with red lettering label.

Wien, Joseph Edler von Kurtzbök, 1778. 2200.–

SEDOND and much enlarged edition in a splendid fresh copy and very nice contemporary binding. The pagination of the prelimary matter is somewhat caotic but the copy is complete.

Joseph Edler von Herbert (1725–1794) was professor of experimental physics at the university of Vienna and as such deeply concerned with the exciting new medium electricity. He published a number of books on the subject matter of which, however, the present „Theory of Electric Phaenomena" is his most substantial and extensive. It was first issued in a much slimmer version in 1772. Of particular importance are his biological-electro researches.

De Backer-Sommervogel IV, 288; Ronalds 243; Not listed in Mottelay, Wheeler-Gift.

Exerting Great Ifluence on Gestalt Theory

298 HERING, KARL EWALD KONSTANTIN. Ueber das Gedächtnis als eine allgemeine Function der organisirten Materie. Vortrag gehalten in der feierlichen Sitzung der kaiserlichen Akademie der Wissenschaften am XXX. Mai MDCCCLXX. Offprint from the „Abhandlungen der k. Akad. der Wissenschaften, 20". 26 pp. 8vo. Original brown printed wrappers bound in protective cloth.

Wien, Gerold, 1870. 675.–

FIRST EDITION, uncut copy, well preserved; old ownership's stampf „C. Langer" on frontcover.

Karl Ewald Konstantin Hering (1834–1918) was responsible for the „psycho-physical theory" of heredity, „that facultative memory, the automatic power of protoplasm to do what it has done before, is the distinctive property of all living matter" (Garrison). Hering studied medicine in Leipzig. For a while he practised medicine, taught physiology and in 1865 received a call to become Carl Ludwig's successor at the Academy of Military Medicine in Wien. There he developed the principle of the two eyes as one single organ. Moreover, Hering formulated the concept of identical retinal locations. With Josef Breuer he discovered reflex reactions originating in the lungs and mediated by the fibers of the vagus nerve. His believe that the transmission and reproduction of parental characters are the result of the organism's preconscious memory of the past was an idea subsequently reiterated by Samuel Butler.

As the main representative of the phenomenological tradition Hering exerted a great influence on the evolution of modern psychology, particularly Gestalt theory.

Garrison-Morton 227; Rotschuh, History of Physiology, pp. 299 ff.; Young, Bibliography of Memory, p. 158.

Pioneer Neurologist
Inscribed Copies

299 HITZIG, EDUARD. Ueber die beim Galvanisieren des Kopfes entstehenden Störungen der Muskelinnervation und der Vorstellung vom Verhalten im Raume. Weitere Untersuchungen zur Physiologie des Gehirns. Offprint from „Reichert's und du Bois-Reymond's Archiv, 1871, No. 5/6". With a folding-out table and the errata-slip. 59 (+ 1 blank) pp. 8vo. Original green printed wrappers.

Berlin, 1871.

AND WITH:

HITZIG, EDUARD. Untersuchungen über das Gehirn. Neue Folge. 2 parts Offprint from the same journal, 1875, No. 4 (&) 1876, No. 6. 29 (+ 1 blank) pp.; 22 (first and last blank) pp. Original green printed wrappers.

Berlin, 1875–1876.

AND WITH:

HITZIG, EDUARD. Hughlings Jackson und die motorischen Rindennerven im Licht physiologischer Forschung. Gelesen in der Neurological Society of London den 29. November 1900. 4, 39 (+ 1) pp. 8vo. Original grey printed wrappers.

Berlin, Hirschwald, 1901.

AND WITH:

HITZIG, EDUARD. Ueber reflexerregende Druckpunkte. Offprint from „Berliner Klin. Wochenschrift, 1866, No. 7". 9 (+ 1 blank) pp. 8vo. Original wrappers.

Berlin, 1866. 800.–

FIRST EDITIONS OF ALL 4 papers. The first two papers bear penned presentation inscriptions by Hitzig for Dr. Ewald, a colleague. On the frontwrapper of the last paper the author's inscription for Dr. Riess.

Eduard Hitzig (1838–1907), a native of Berlin, came of a distinguished family. His grandfather was a criminologist, writer and poet, and his father was one of Europe's most renowned architects. Hitzig received his doctorate in Berlin in 1862 and engaged in the practice of medicine in Berlin. Called to Zürich in 1875, he became professor of psychiatry and director of the famous Burghölzli Assylum where a year later, von Monakow became one of his pupils. Later he was appointed to newly founded neuropsychiatric clinic of the University of Halle.

Hitzig's epochal studies of the electrical excitability of the cerebral cortex were intiated during the 1860's and marked a beginning of a new era in the study of brain physiology. His comprehensive grasp of the problems involved in the physiology of the brain and his capacity to evaluate the data at hand are particularly evident in his Hughlings Jackson Lecture on the motor cortex.

Haymaker & Schiller, Founders of Neurology, pp. 229 ff.

Electricity is Favourable in Cases of Paralysis

300 MAUDUYT, ANTOINE RENÉ. Mémoire sur les différentes manières d'administrer l'électricité et observations sur les effets qu'elles ont produits. Extrait des „Mémoires de la Société Royale de Médecine". Illustrated by two large engraved folding plates. 2, 301 (verso blank) pp. Tall-8vo. Contemporary half calf, gilt spine and gilt decorations on covers.

Paris, Imprimérie Royale, 1784. 1185.–

FIRST SEPARATE, FIRST BOOK EDITION based on the author's lecture before the Royal Society delivered December 2, 1783. A well preserved copy.

Antoine René Mauduyt (1731–1815) was professor at the Collège de France and author of several publications of his observations from which he concludes that the application of electricity is favourable in cases of paralysis. He was in the habit of placing the patient upon an insulated stool, in communication with the conductor of an electrical machine. De La Rive who mentions the fact in the third chapter of his „Electricity", observes that the effect, if any, could only proceed from the escape of electricity into the air.

This octavo edition was published simultaneously with a quarto edition; Ronalds lists the 8vo-issue as second editon, Roller & Goodman as first edition.

Bibliotheca Walleriana 11400; Roller & Goodman II, 171; Ronalds 338.

300a MORIN, (JEAN). Nouvelle dissertation sur l'electricité des corps, dans laquelle on develope le vraie mecanisme des plus surprenans phénomènes, qui ont paru jusqu'à present, d'une infinité d'experiences nouvelles, de l'invention de l'Autheur. 200 pages, 8 unn. leaves, final blank leaf. 8vo. Contemporary calf, gilt spine and gilt supralibris.

Chartres & Paris, Veuve Estienne & fils, 1748. 1800.–

FIRST EDITION in a well preserved copy from the library of Charles-Philippe d'Albert, Duc de Luynes et de Chevreuse, comte de Montfort et de Tours (1695–1758), mestre de camp de Cavalerie 1717, Pair de France 1723, Chevalier des Ordres du Roi, 1748.

The author of this rather early treatise on biological experiments with electricity, Jean Morin (1705–1764) was physicist and professor of philosophy at the Royal College in Chartre. He details many of his experiments and endeavours to give a correct explanation of all the extraordinary electrical phenomena hitherto observed.

Not listed in Wheeler-Gift; Mottelay 187; Ronalds Collection 352.

Ueber die

phantaſtiſchen

Geſichtserſcheinungen.

Eine phyſiologiſche Unterſuchung

mit einer phyſiologiſchen Urkunde des Ariſtoteles über den Traum,

den Philoſophen und Aerzten gewidmet

von

Dr. Johannes Müller,

außerordentlichem Profeſſor der Medicin an der Univerſität in Bonn, practiſchem Arzt und Wundarzt daſelbſt, Mitglied der Kaiſerl. Leopoldin. Carolin. Academie der Naturforſcher.

Coblenz,

bei Jacob Hölſcher.

1826.

Doctrine of Specific Nerve Energies

301 MÜLLER, JOHANNES. Über die phantastischen Gesichtserscheinungen. Eine physiologische Untersuchung mit einer physiologischen Urkunde des Aristoteles über den Traum, den Philosophen und Ärzten gewidmet. X, 117, 1 (blank but impressum) pages. 8vo. Old, very likely original, wrappers preserved in a neat cloth case.

Koblenz, J. Hölscher, 1826. 4200.–

FIRST EDITION in an unopened and uncut, wide margined copy. „*Exposition of the doctrine of specific nerve energies, stating that the kind of sensation depends upon the nature of the sense organ, not upon the mode of stimulation*" (Horblit).

Müller was responsible for a remarkable advance in neurophysiology. Goethe's blend of feeling and science exerted an irresistable influence as can best be seen in the present treatise „On Fantastic Visual Appearances", a small volume treating such pathological topics as hallucinations, illusions, and visions. In it he showed that the sensory system of the eye not only reacts to external optical stimuli but also can be exited by interior stimuli arising from organic malfunction, lingering mental images, or the play of the imagination. He himself found it easy to make luminous images of people and things appear suddenly, move about, and disappear whenever he closed his eyes and concentrated on his

darkened field of vision. With such self-observation and self-experimentation, supplemented with reports of earlier and contemporary authors – including *Gsoethe*, who in his scientific research likewise commenced from subjective experience – Müller demonstrated that optical perception can arise without an adequate external stimulus. When the stimulus is mistakenly assumed to have originated outside the body, the result – depending on the situation – is the reporting of religious or magical visions, or the seeing of ghosts.

Du Bois-Reymond/Koller, Bibliographie no. 9; DSB IX, pp. 570; Haymaker-Schiller, Founders of Neurology, pp. 243 ff.; Horblit, 100 Books Famous in Science, no 76; McHenry, History of Neurology, pp. 201; Müller-Freienfels, Evolution of Modern Psychology, pp. 154 ff.

Very Early Electro-Physiological Experiments

302 NOLLET, JEAN-ANTOIN, L'ABBÉ. Recherches sur les causes particulières des phénomènes électriques, et sur les effets nuisibles ou avantageux qu'on peut en attendre. Illustrated with 8 fine engraved plates. XXXVI, 444 pp. 8vo. Fine contemporary light brown calf, triple gilt line borders on covers, richly gilt decorated spine, marbled edges.

Paris, Frères Guerin, 1749. 1800.–

FIRST EDITION in a splendid fresh copy and a nice contemporary binding.

Few figures stand out more prominently among the experimenters and popularizers of electrical knowledge and interest than Jean A. Nollet (1700–1770), whose mind and ambition made him a tutor and intimate of the Dauphin, a member of the French Academy of Sciences, a Fellow of the Royal Society, a professor of physics at Navarre and at Paris. No other man has popularized electrical experimentation more through the publication of numerous books and papers and by impressive demonstrations before royalty and learned societies.

Nollet found that in addition to water as a receiver in a Leyden Jar, other liquids served equally well, including mercury, and that even powders of iron filings would do. In a special section towards the end of the volume Nollet describes his experiments on the *Effects of electricity on animals and vegetables,* illustrated with a charming plate. In one experiment he planted mustard seeds in separate recerptacles and kept one such under electric charge for eight days. He noted that the electrified plants grew more than four times as fast as the others, though less hardy. For animal effect, two cats, each four months old, were selected, and one was kept near an electrical machine and was given electric treatments. The electrified cat lost more weight than the other, although Nollet was not completely certain of the cause-effect relationship. The experiments were extended to small birds, to pigeons and to humans, with consistent loss of weight. He then tried to administer electric treatment to paralytic and sick patients with no positive results. *Thus nollet was one of the earliest experimental electrophysiologists.* – A very fine copy.

Dibner, Early electrical Machines, pp. 28 ff.; DSB X, 145 ff.; Ekelof I, 21; Waller 11416; Wheeler-Gift 355.

Experiments of Differing Contractability of Various Muscles
Early Electrical Research on Human Heart

302A NYSTEN, PIERRE HUBERT. Nouvelles expériences Galvaniques, faites sur les organes musculaires de l'homme et des animaux à sang rouge; dans lesquelles, en classant ces divers organes sous le rapport de la durée de leur excitabilité galvanique, on prouve que le coeur est celui conserve le plus long-temps cette propriété. With a large folding table printed on bluish paper. X, 144 pp. Tall 8vo. Original boards, red spine lettering label, gilt lettering.

Paris, Levrault, an XI (= 1802). 1200.–

FIRST EDITION in a well preserved copy.

Pierre Hubert Nysten (1771–1818), a keen experimenter and known as the editor of the famed „Dictionnaire des Sciences Médicale", describes in the beginning of his very interesting volume who he heard of a public decapitation on his way to the laboratory where he conducted electrical experiments. He immediatly realized the almost unique chance to extend his research on the human heart

and obtained the necessary papers which enablerd him to take over the culprits body after the axe had fallen. Under rather miserable circumstances he worked for several hours in a dugout of a churchyard. He opened the body, and exposed the heart to galvanic currents watching the organ contract; he tried the same on other inner organs but without any sign of contractability. These researches are among the very first executed on a human body. He continues his observations and galvanic tests on dogs' hearts, birds, fishes and frogs.

The book met an interested audience and in the following year was translated into German (see the following item).

Hirsch-Hübotter IV, 397/8; Ronalds 372; Poggendorff II, 305.

302B NYSTEN, PIERRE HUBERT. Neue an den muskulösen Organen des Menschen und rothblutiger Thiere angestellte galvanische Versuche. Aus dem Französischen von *Christian Friedrich Dörner.* With a large folding table. XVI, 104 pp. Small-8vo. Contemporary and very likely original boards.

Tübingen, Johann Friedrich Heerbrandt, 1804. 1250.–

FIRST EDITION IN GERMAN. A well preserved copy though there is some foxing.

Pierre Hubert Nysten (1771–1818) was a member of the yellow fever commission sent to Spain in 1802 and is perhaps better known as the editor of the famous „Dictionnaire des Sciences Médicale" which was first published in 1810 and the 12th edition of which is listed by Garrison-Morton under number 6802.

Nysten's researches included electric reaction tests on the heart and muscles of a dicapitated criminal followed by further galvanic tests on dogs, birds, fishes and frogs.

Hirsch-Hübotter IV, 397–8; Ronalds 372.

Manupulation of Man

303 PAVLOFF, I.-P. Leçons sur l'activité du cortex cérébral. Traduit par Madame Dr. I. Trifonoff. XII, 418 pp. Large 8vo. Original printed wrappers.

Paris, 1929. 250.–

FIRST FRENCH EDITION of this important series of lectures held by Pavloff during the year 1924 before the Military Academy of Medicine at Moscow and which, as the author states in his preface represents 25 years of labour.

In 1891 Ivan Petrovitch Pavlov became director of the department of physiology, Institute of Experimental Medicine in St. Petersburg. Here his interest in the secretory nerves of the pancreas and the study of the physiology of the digestive glands led to his important contributions in conditioned reflexes and induced automatic responses to stimuli. These have become of ever-growing importance in political practices and sociological sciences. Completely mechanistic, he concluded that even such concepts as „freedom", „curiosity" and „religion" were conditioned reflexes of the brain. Fine copy of a rare book.

Priestley's Anatomy of the Eye

304 PRIESTLEY, JOSEPH. The History and Present State of Discoveries relating to Vision, Light, and colours. 2 volumes. Illustrated with the large biographical-folding-chart in volume one and the 24 large engraved folding plates. V (+ 1 blank), XVI pp., 8 pp. list of subscribers and errata, 422 pp.; title-page, pp. 423–812, 6 unn. leaves. 4to. Half calf.

London, J. Johnson, 1772. 2800.–

FIRST EDITION and one of the apparently few copies with the additional list of subscribers printed on the reverse of the errata leaf which in other copies remained a blank.

By the spring of 1770 Priestley had formed an ambitious plan to write a history of the whole of experimental philosophy. Thus he now regarded the history of electricity as the first volume of a comprehensive series. He tried hard to find sponsors to meet the heavy expenses involved in the publica-

tion of the planned large publication. By the end of 1770 and the beginning of 1771 he decided that he better print the book by subscription to make sure of recovering his expenses. By the end of the year the book was almost finished, and he was well satisfied with it. He found that light was a fine subject for the historian much better, in fact, than electricity. A large number of plates would be required, he said, and the general effect should be pleasing. Priestley thought it was as much needed as the former history, for few even of his scientific friends had much idea of how discoveries in optics had taken place.

The book was ready early in 1772; in it Priestley gave clear descriptions of the development of various branches of the subject and adopted a critical attitude. Thus he took great pleasure in writing about Newton's discoveries, although, as others had done, he criticized Newton's explanations of the phenomenon known as Newton's rings and Boscovich's attempts to explain the rainbow. Throughout he added constructive hints for those wishing to follow up the experimental side of the subject and tried to comment usefully on controversial issues.

Being interested in anatomy and in Hartley's view's on man, he paid special attention to the „proper seat of vision", taking advantage of Hey's position in the Infirmary to obtain direct information about the eye and its diseased condition. As a result he became fully convicted that the retina was the centre where visual images are registered, and that these images are in turn transferred to the brain via the optic nerve. Several other arguments of an anatomical nature were added.

Priestly also gives a full account of optical instrumernts, including Kircher's Magic Lantern, one of the things he afterwards kept by him for the amusement of the children. Other instruments he had found of great interest are Lieberkühn's solar microscope, Wilson's microscope, etc. etc.

One of the unexpected results of Priestley's studies of light and of optical and astronomical instruments was an invitation to join Captain James Cook's second voyage of scientific discovery as the expedition's astronomer. However, his enemies knew ways to prevent this; Priestley had so many other useful things to do that he scarcely minded the rebuff. Indeed, he tried to make a useful contribution to the expedition, in the form of *a drink that might help to prevent scurvy (see the following item).*

Although his *History of Optics* contains much useful information, it was less successful than his *History of Electricity*. Until recently optics had not attracted substantial historical interest, and although the book had but one English edition and a translation into German, it remained the only English work on the subject for a 150 years and the only one in any language for over fifty.
A well preserved set; some insignificant foxing here and there.

DSB XI, 139 ff.; Crook 479 (only 15 plates and no title to the second volume); Gibbs, Priestley, pp. 51–57.

Unsurpased Classic in Neurology

305 RAMÓN Y CAJAL, SANTIAGO. Histologie du système nerveux de l'homme & des vertébrés. Edition française revue & mise à jour par l'auteur. Traduite de l'espagnol par L. Azoulay. 2 volumes. Illustrated by the author's portrait and over 1000 figures in the text, many printed in colours. XV (+ 1), 986 pp.; 6, 993 (+ 3) pp., 2 blank leaves. Large 8vo. Original blue cloth.

Madrid, Instituto Ramón y Cajal, 1952–1955. 680.–

MONUMENTAL COLLECTED EDITION OF THE OUTSTANDING CLASSIC ON THE SUBJECT. A fresh and well preserved set.

Santiago Ramón y Cajal (1852–1934) refined Golgi's staining technique and subsequently used it to show the intricacy of the structure and connections of cells in the gray matter of the brain and spinal cord. The stain was also useful in the diagnosis of brain tumors. In 1906 Ramón y Cajal was awarded the Nobel Prize for Physiology or Medicine (together with Golgi) for establishing the neuron as the fundamental unit of the nervous system – a finding basic to the present understanding of the nerve impulse. He also advanced the neuron theory, which states that the nervous system is made up of numerous discrete cells and is not a system of fused cells.

Haymaker-Schiller, Founders of Neurology, pp. 147 ff.

306 RAMÓN Y CAJAL, SANTIAGO. Structure et Connexions des Neurones. Conférence Nobel faite à Stockholm le 12 décembre 1906. Illustrated by eleven plates. In: Les Prix Nobel en 1906, 20 pp.

Stockholm, 1908.

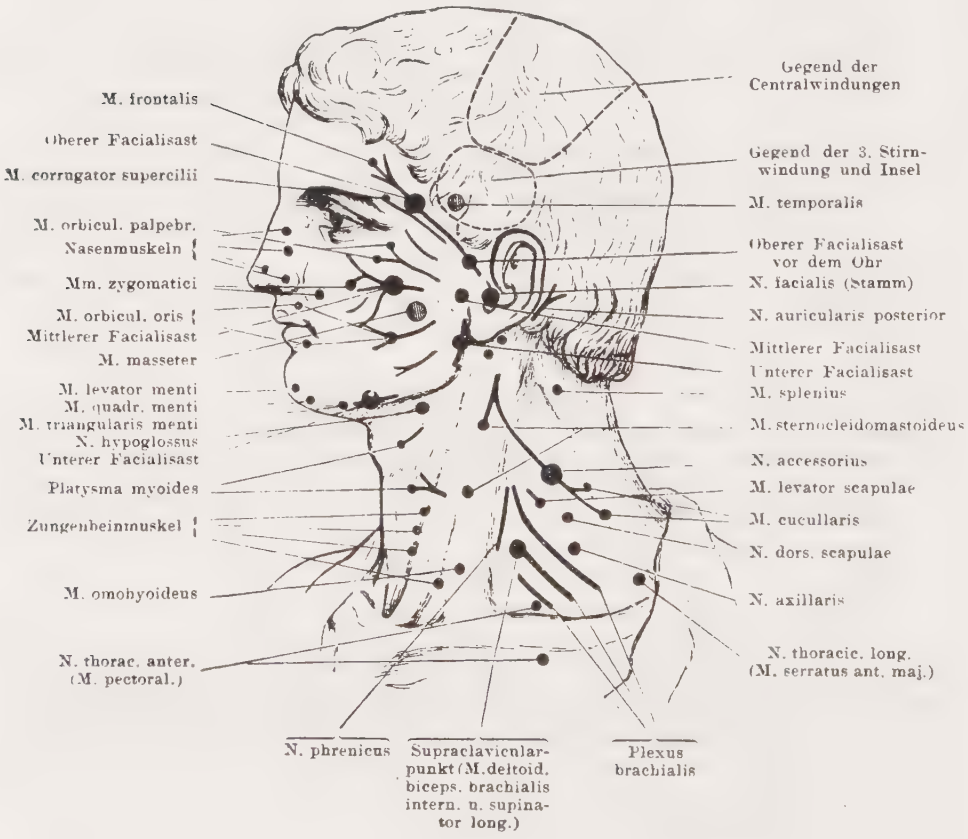
And with:

GOLGI, CAMILLO. La dotrine du neurone. Théorie et faits. Conférence Nobel faite à Stockholm le 11 décembre 1906. Illustrated by 19 text-figures. 31 (+ 1 blank) pp. Tall-8vo. Original printed wrappers.

Stockholm, 1908. 225.–

ORIGINAL EDITIONS of the two famous Nobel Prize Lectures by Golgi and Ramón y Cajal who joined the 1906-Nobel Prize in Physiology „in recognition of their work on the structure of the nervous system".

Nobel, The Man and His Prize, 243 ff.



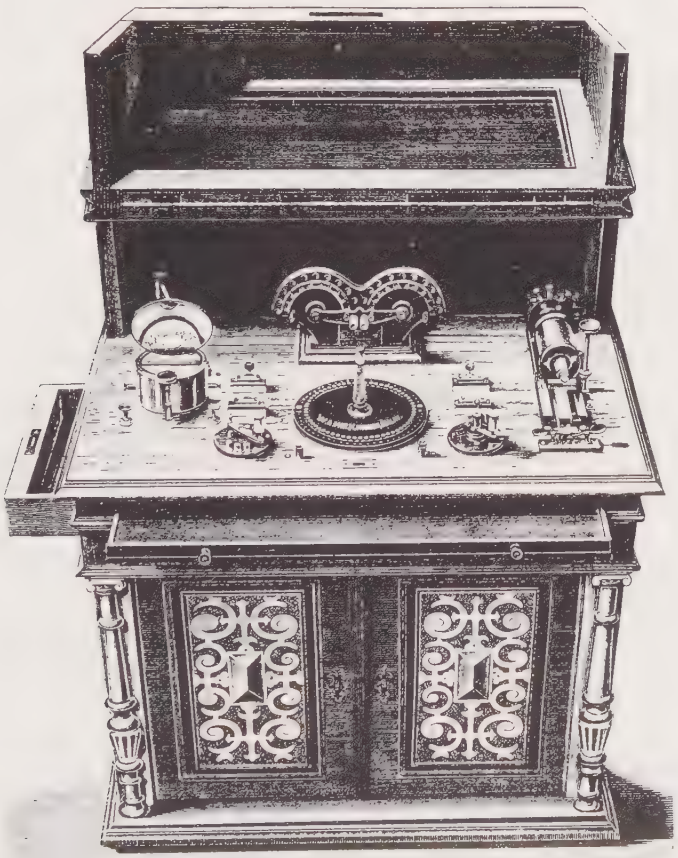
307 REMAK, ERNST. Grundriss der Elektrodiagnostik und Elektrotherapie für praktische Aerzte. Illustrated by 19 woodcuts in the text. VIII, 196 pp. Tall-8vo. Original cloth.

Wien & Leipzig, 1895. 460.–

FIRST EDITION of this survey of electrodiagnostics and electrotherapy by Robert Remak's, the discoverer of the nonemedullated nerve fiber REMAK'S FIBER, son Ernst Remak. (1848–1911).

Ernst Remak was assistant under Westphal in Berlin, practised here as psychiatrist and neurologist, became professor 1893 and published a great number of books and papers of which the present volume is one of the most important. It was originally conceived as contribution to Eulenburg's Real-Enzyklopädie. It is sumptuously illustrated with the appartus of the time which to a large extent was developed and built by the physicians who used them in their practice.

Pagel 1366–67; Cf. Garrison-Morton 4587.



Remak-Hirschmann'scher Apparat

Discovery of the Nerve Fibers of Remak

307a. REMAK, ROBERT. Observations anatomicae et microscopicae de systematis nervosi structura. Illustrated with 30 finely drawn illustrations on two large plates. VI, 41 pp. 4to. Original blue printed wrappers in protective cloth case.

Berlin, 1838. 2700.–

FIRST EDITION of one of the rarest of 19th century medical classics.

Robert Remak (1815–1865) was the leader among the early cytologists of the nervous system. Most of his publications *were epoch making*. As early as 1836, when a compound microscope came into his possession he published treatises on the histological structure of the nervous system. In his doctoral thesis of 1838 he recognized that the sympathetic fibers were gray because they were nonmyelinated (REMAK'S FIBERS) and, *most important* that axons of nerves were continuous with cells in the spinal cord (REMAK'S BAND, christened „axis cylinder" by Purkyne); also that the sympthetic ganglion is the real center of the organic [automatic] nervous system. His findings are all described in this famous paper.

Garrison, History of Neurology, pp. 159 ff; Garrison-Morton no. 3262; Waller 7877.

Magnificent Work on the Nervous System

308 RETZIUS, GUSTAF & AXEL KEY. Studien in der Anatomie des Nervensystems und des Bindegewebes. Erste Hälfte & Zweite Hälfte, Erste Abtheilung (all published). (12), 220 pp + (8), 228 pp. With 75 extremely fine plates (17 copper engravings and 58 lithographs of which many in strikingly beautiful colours). Two thick volumes in large folio – publisher's black half calf, gilt spine, title in bold gilt lettering on front cover. Preserved in the original blank dust wrappers.

Stockholm, P. A. Norstedt & Söner, 1875–1876. 3200.–

FIRST EDITION and one of the most beautiful and outstanding neuroanatomies ever published. A VERY FINE AND FRESH SET as it hardly ever turns up.

Magnus Gustaf Retzius (1842–1919) professor of histology at the Karolinska Institutet in Stockholm, was „one of the most eminent of modern histologists" (Garrison). – „His studies of nerve cells and their processes in a wide variety of invertebrates and vertebrates helped establishing the foundation upon which the neuron doctrine was based." (Haymaker: Founders of Neurology).

His magnificent two-volume work on the central nervous system and its membranes (1875–1876) which he wrote together with Axel Key, is ilustrated with exceptionally fine lithographed and engraved plates of which many in strikingly beautiful colours. This work won the Prix Montyon of the French Academie des Sciences.

„The bulk of Retzius' writings were devoted to neuroanatomy and neurophysiology. Their direct influence on contemporary work can be seen from the wealth of citations to them in, for exemple, . . . S. Ramón y Cajal (1899). Even as late as 1950, when R. Lorente De Nó provoked a debate on the ineffectiveness of the nerve sheats as diffusion barriers, most researchers found it necessary to refer to the still-authoritative investigations of Key and Retzius".

(Dict. of Scient. Biogr. XI, 381–3).

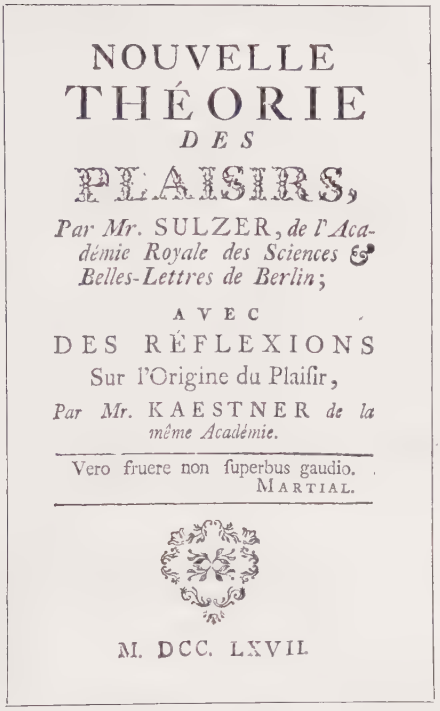
700 Photographs of Ape Brains

309 RETZIUS, GUSTAF. Das Affenhirn in bildlicher Darstellung (Cerebra Simiarum Illustrata). (12), 24 pp – with 67 fine plates with photographs of about 700 simian brains (photo Chr. Westphal) each with extra explanatory plate in line drawing. Folio – publisher's half white simulated leather, black morocco spine label, gilt decorated spine, fine marbled boards.

Stockholm, Centraltryckeriet, 1906. 1800.–

A REMARKABLE WORK on the anatomy of the ape brain. – It was at that time, especially here in Sweden, combined with tremendous work for Retzius to bring together such a collection of ape

brains, which also had to be well prepared and in good condition to be accepted for his great work. – „Um für das Photographieren möglichst schöne und unbeschädigte Präparate zu erhalten, präparierte ich selbst von jedem Gehirn die weiche Hirnhaut ab und stellte dem Photographen jedes Stück selbst auf. Diese Arbeit hat mir sehr viele Zeit gekostet . . . Durch das hervorragende Talent des Photographen Herrn Chr. Westphal, ist es mir gelungen, eine Anzahl Tafeln von dem Gehirn der Affen zu halten, die in unserer Zeit kaum besser gemacht werden können." (Retzius Vorwort) – A fine copy.



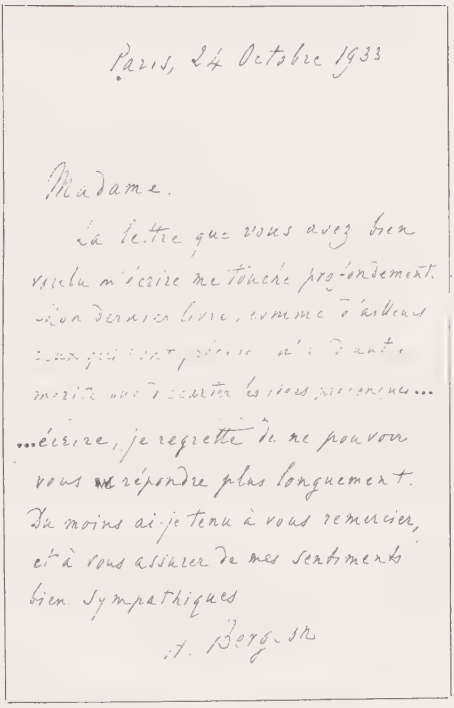
NOUVELLE
THÉORIE
DES
PLAISIRS,

Par Mr. SULZER, *de l'Académie Royale des Sciences & Belles-Lettres de Berlin;*

AVEC
DES RÉFLEXIONS
Sur l'Origine du Plaiſir,
Par Mr. KAESTNER *de la même Académie.*

Vero fruere non ſuperbus gaudio.
MARTIAL.

M. DCC. LXVII.



Paris, 24 Octobre 1933

Madame.

La lettre que vous avez bien voulu m'écrire me touche profondément. Mon dernier livre, comme d'ailleurs ceux qui l'ont précédé, n'a d'autre mérite que d'écarter les idées préconçues et de faire appel à la vie intérieure profonde, généralement masquée à la conscience par des préjugés interposés . . .

...écrire, je regrette de ne pouvoir vous répondre plus longuement. Du moins ai-je tenu à vous remercier, et à vous assurer de mes sentiments bien sympathiques

H. Bergson

– No. 310/310A –

Henri Bergson's First Book
With Fine Autographed Letter

309A SULLY, JAMES – HENRI BERGSON (TRANSLATOR). Les Illusions des sens et de l'esprit. IV, 4, 264 pp. + 32 pp. publ. ads. 8vo. Original cloth, gilt decorated. Paris, Germer Baillière et Cie., 1883. 1250.–

FIRST FRENCH EDITION of James Sully's famous work in a well preserved fresh copy, a finely written autographed letter by Bergson is tipped in which he thanks a lady for her compliments about his book „Mon dernier livre, comme d'ailleurs ceux qui l'ont précédé, n'a d'autre mérite que d'écarter les idées préconçues et de faire appel à la vie intérieure profonde, généralement masquée à la conscience par des préjugés interposés . . ." James Sully (1842–1923), professor in London, was one of the members of the group of scientists, friends and correspondents that centered about Darwin and the great intellectual topic of the day, the theory of evolution.

His book „Illusions" was a stimulating essay on a subject that was at the time arousing the greatest interest among psychologists of all schools. It was favourably commented son by Wilhelm Wundt and soon became translated into the major European languages.

It is a little mentioned fact (cf. the Exhibition Henri Bergson, Bibliothèque Nationale, Paris) that the young Henri Bergson in the beginning of his scientific carreer translated sully's book into French. It was printed without giving credit to his name, though. This edition is of some rarity.

Cf. Boring, History of Experimental Psychology, pp. 467 ff.; Flugel & West, 100 Years of Psychology, pp. 122 ff.; DSB II, pp. 8 ff.

Included is a fine autographed letter by BERGSON, HENRI, Philosoph, Nobelpreisträger, 1859–1941. L.a.s. Paris, 24. X. 1933. 8°. 1 1/2 S.

Pre-Galvanian Discovery

310 SULZER, JOHANN, GEORG. Nouvelle théorie des Plaisirs. Avec des refléctions sur l'origine du plaisir par Mr. Kaestner. Illustrated with a large engraved folding plate. 2 leaves, 363, 1 pp. 8vo. Half vellum.

No place (Genève?), 1767. 1200.–

FIRST AND ORIGINAL BOOK EDITION, FIRST COMPLETE EDITION. A well preserved fresh and clean copy, completely uncut with wide margins. Printed on heavy paper; apparently parts of the edition had been printed in normal paper whilst our copy excells in the fine quality of the paper used. *„The Discovery which Showed"* that when unlike metals such as silver and lead were held together on the tongue, a taste like that of iron sulfate was produced, and when one was held on the tongue and the other below it, there was no sensation until the outer edges of the metals came in contact" (Meyer, History of Electricity . . . pp. 345).

Johann Georg Sulzer (1720–1779), professor in Berlin and member of the famous Academy of Sciences, does not appear to have been much surprised at the result, thinking it „not improbable that, by the combination of the two metals, a solution of either of them may have taken place, in consequence of which the dissolved particles penetrate into the tongue; or we may conjecture that the combination of these metals occasions a trembling motion in the respective particles, which, exciting the nerves of the tongue, causes that peculiar sensation."

And thus a prominent fact has slept in obscurity from the time of Sulzer to the time of Galvani.

Dibner, Sulzer-Galvani, 1952, pp. 8 ff.; Ronalds 491; Mottelay 223; Wheeler-Gift 420.

310a –. THE SAME. Nice contemporary light brown calf, richly gilt decorated spine with lettering label.

Same edition on normal paper. 1100.–

Interesting Historical Account

311 TESTE, ALPHONSE. Le magnetisme animal expliqué ou leçons analytiques sur la nature essentielle du magnétisme, sur ses effets, son histoire, ses applications, les diverses manières de la pratiquer, etc. VII (+ 1 blank), 479 (+ 1) pp. Tall-8vo. Contemporary green half morocco, gilt decorated spine.

Paris, Baillière, 1845. 485.–

FIRST EDITION in a well preserved copy; a charming contemporary binding.

Alphonse Teste (1814–1878) a Paris society magnetiser, homoeopath and physician, was a versatile author of matters magnetic. His first book on the subject was published in 1840 *(see Bibliotheca Medica II, 373 [cat. 276])* and within merely six years run through several editions.

Not listed by Mottelay, Ronalds, Wheeler-Gift; Caillet 10583.

A Fundamental Paper in Neurology

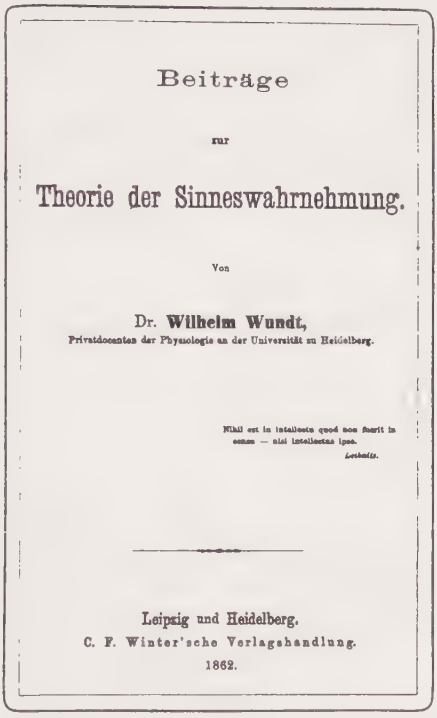
312 WERNICKE, CARL. Der aphasische Symptomencomplex. Offprint from „Deutsche Klinik am Eingange des 20. Jahrhunderts". With 7 illustrations. 70 pp. 8vo. Original green printed wrapper bound in protective green cloth.

Berlin & Wien, Urban & Schwarzenberg, 1903. 350.–

First Edition of this famous paper. The original communication of 1874 contained less material.

The work for which Carl Wernicke (1848–1905) became internationally famous was a small book on aphasia, published when he was twenty-six. In it he stressed the influence of Maynert and Broca. The originality of this and subsequent works lies not in precise pathoanatomical analysis so much as in his attempt to interpret the various aphasic symptom-complexes as consequences of impairment of various elementary psychic processes which he localized in different parts of the cerebral cortex and their subcortical connections. Yet in the course of these studies he did describe, for the first time, sensory aphasia and its localization in the posterior part of the first temporal convolution. The simple graphic presentation of his ideas on the structure of language in relation to the cerebral cortex was based on the reflex concept. It became the mainspring of the many brain „diagrams" so characteristic in this era and have recently been revived by Geschwind.

Haymaker & Schiller, Founders of Neurology, pp. 533 ff.; DSB XIV.



Beiträge

zur

Theorie der Sinneswahrnehmung.

Von

Dr. **Wilhelm Wundt,**

Privatdocenten der Physiologie an der Universität zu Heidelberg.

Nihil est in intellectu quod non fuerit in sensu — nisi intellectus ipse.

Leibnitz.

Leipzig und Heidelberg,

C. F. Winter'sche Verlagshandlung.

1862.

Beginnings of Experimental Psychology

313 WUNDT, WILHELM. Beiträge zur Theorie der Sinneswahrnehmung. XXXII, 451 pp. 8vo. Original grey printed wrappers.

Leipzig and Heidelberg, Winter, 1862. 1200.–

FIRST EDITION IN BOOKFORM in a well preserved copy, largely unopened and uncut. The papers were printed before in a scientific journal „Zeitschrift für rationelle Medizin" 1858–1862.

In 1858 Wilhelm Wundt (1832–1920) published the first section of his „Contributions to the Theory of Sense Perception"; the section on touch, which draws largely upon E. H. Weber, Johannes Müller and Lotze. Wundt already was conceiving of perception as something psychologically more than the physiologist's sensation. The last paragraph of this section contains a brief discussion of unconscious interference as the mechanism of perception; and this paragraph must have been written, perhaps published, before Helmholtz came to Heidelberg. This first section was followed by two more in the following year, one more in 1861 and the last two sections in 1862. The entire book, with its introduction that Titchener says outlined the program of Wundt's life, was also published in 1862.

Here we have a book that has some claim to being the *beginning of experimental psychology*, partly because it is in content experimental psychology, partly because it presents a formal plea for experimental psychology, called by that name, and partly because, for all its shortcomings, it is Wundt's first book in experimental psychology. The experimental contents of the „Beiträge" were new, but they were hardly so psychologically original as Weber's work on touch had been. No, the actual experimental content of the books is of primary psychological importance only because it shows Wundt, while still immersed in physiology, beginning to think and work in experimental psychology and, moreover, in the crucial field of perception.

Garrison-Morton 1463; Not in Osler or Waller; DSB XIV, 526 ff.; Boring, History of Experimental Psychology, pp. 318–324.

Untersuchungen

zur

Mechanik der Nerven

und

Nervencentren.

Von

Wilhelm Wundt,

Professor an der Universität zu Heidelberg

Erste Abtheilung

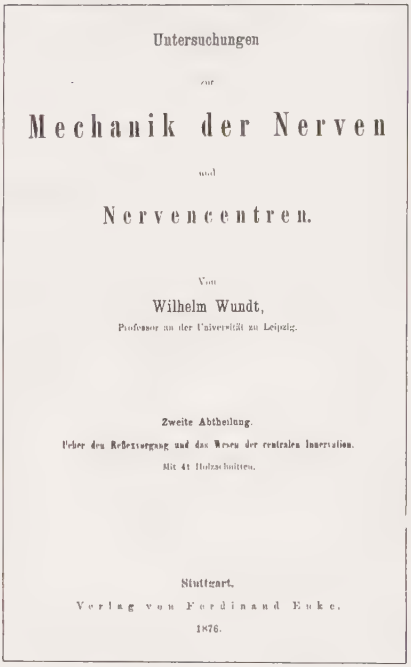
Ueber Verlauf und Wesen der Nervenerregung.

Mit 30 Holzschnitten

Erlangen,

Verlag von Ferdinand Enke.

1871.


Untersuchungen

zur

Mechanik der Nerven

und

Nervencentren.

Von

Wilhelm Wundt,

Professor an der Universität zu Leipzig.

Zweite Abtheilung.

Ueber den Reizvorgang und das Wesen der centralen Innervation.

Mit 41 Holzschnitten.

Stuttgart.

Verlag von Ferdinand Enke.

1876.

Electro Stimulation

314 WUNDT, WILHELM. Untersuchungen zur Mechanik der Nerven und Nervencentren. 2 parts bound in 1 volume. Illustrated with 71 woodcuts in the text. 2, IX, 278 pp., errata leaf; IV, 2, 144 pp. Tall 8vo. Original yellow printed wrappers.

Erlangen & Stuttgart, Enke, 1871–1876. 1200.–

FIRST EDITION in a fresh and entirely uncut and unopened copy. The book is the outcome of nearly 12 years of research and its publication started before Wundt's famous „Principles of Physiological Psychology" (1874; *see item no .).*

Cf. Boring, History of Experimental Psychology, pp. 320 ff.

PART III

HISTORY OF SCIENCES
USEFUL BIBLIOGRAPHIES

315 ALCHEMY. – FROM ALCHEMY TO ATOMS. 4 parts. Edited by Walter Alicke. With together 212 Illustrations. 533 pp. Large 8vo. Original printed wrappers.

Vaduz, Interlibrum, 1975. 185.–

FROM THE LIBRARIES OF NILS BOHR, K. FAYJANS, MAX VON LAUE e. a. Descriptive catalogue with extensive bibliographical notes and annotations. Volumes I & II appeared under the title: THE ALCHEMISTS DREAM OF TRANSMUTATION AND THE FOUNDATIONS OF MODERN CHEMISTRY and listed a fine collection of rare original editions of works on alchemy and classical chemistry.

Volumes III & IV are dedicated to the development of physics from Gilbert's great treatise on the Magnet to Hahn's epochal discovery of nuclear fission and appeared under the titles: *The foundations of nuclear physics and radiochemistry* and *The modern alchemists.* Descriptions of over 1200 books. A few copies of these catalogues (published as nos. 261–264 in our series PRINTING AND THE PROGRESS OF MAN) are still available.

316 BIBLIOTHECA DE RE METALLICA. The Herbert Clark Hoover Collection of Mining and Metallurgy. Edited by David Kuhner and Tania Ritto. With 32 fullpage illustrations. XX, 219, 3 pp. Large 4to. Original cloth.

Claremont, Calif., 1980. 380.–

ONE OF ONLY 500 COPIES PRINTED. A finely produced annotated bibliography describing and listing well over 900 titles.

Der Grosse Mann aus dem Toggenburg

317 BÜRGI, JOST. – LUDOLF VON MACKENSEN. Die erste Sternwarte Europas mit ihren Instrumenten und Uhren. 400 Jahre Jost Bürgi in Kassel. Ausstellung vom Oktober 1979 bis Januar 1980. Mit zahlreichen, darunter auch farbigen, Tafeln und Abbildungen. 158 SS. Klein-4to. Illustrierter Pappband.

München, 1979. 45.–

ERSTE AUSGABE dieses sehr schönen Ausstellungskataloges, einer der ersten umfassenden Würdigungen des grossen Uhrmachers, Mathematikers und Astronomen Jost Bürgi, der 1552 in Lichtensteig im Toggenburg geboren wurde.

Definite Work

318 CLAY, REGINALD S. & THOMAS H. COURT. The History of the Microscope. Compiled from original instruments and documents, up to the introduction of the achromatic microscope. With 164 Illustrations. XIV, 2, 266 pp. Large 8vo. Original cloth.

London, 1932 (reprinted 1985). 135.–

THIS DEFINITIVE book was first published in 1932. Compiled from first-hand study of original instruments and documents, it goes up to and includes the introduction of the reflecting microscope. Long out of print the book also includes a number of instruments that although not strictly necessary to show the development of the microscope, yet as early and rare form, may have a greater appeal to those collectors who are chiefly interested in them as antique works of art.

319 DIBNER, BERN. Heralds of Science as represented by two hundred epochal books and pamphlets selected from the Burndy Library. Illustrated. 96 pp. 4to. Original cloth.

Norwalk, Washington, 1980. 120.–

The fine descriptive catalogue, which like the famous PRINTING AND THE MIND OF MAN catalogue, initiated a new book-collecting trend the world over.

This new edition has additional material!

DSB Complete with Index
The Great Reference Tool
Over 5000 Biographies

320 DICTIONARY OF SCIENTIFIC BIOGRAPHY. Charles C. Gillespie Editor in Chief. 14 volumes plus supplement and index in together 16 volumes. Large 4to. Original stout buckram.

New York, 1970–1980. 3400.–

The complete set of this fine reference work and already a much cited standard work which should be present in every reference library.

At last complete now – one of the books which I call a MUST in any library of reference worthy its name, containing over 5000 biographies. The valuable index volume increases the usefulness of the *Dictionary of Scientific Biography* many times over. It is not a simple listing of names and places but a complete topical listing of every important person, concept, theory and movement in the history of science mentioned or discussed in the 15 volumes of the parent set. The more than 75 000 topic and subtropics are designed to lead the user into the rich resource that is the DSB.

321 EINSTEIN, ALBERT. – Albert Einstein 1879–1979. An almost complete collection of his publications and two original manuscripts. Edited by Walter Alicke. With numerous illustrations. 128 pp. Paperbound original cover design by Hans Erni.

Vaduz, Interlibrum, 1979. 85.–

Extensive bibliographical notes, entries listed according to Weil's bibliography. Limited edition only few copies available. Published in our series of catalogues: Printing and the Progress of Man, Supplement II.

Exhibition of

FIRST EDITIONS OF
EPOCHAL ACHIEVEMENTS
IN THE
HISTORY OF SCIENCE

Forerunner of All Later PMM, PPM Exhibitions

322 EVANS, HERBERT McLEAN. Exhibitions of First Editions of Epochal Achievements in the History of Sciences. 48 pp. 8vo. Original stiff printed wrappers.

Berkeley, 1934. 80.–

ORIGINAL EDITION of this famous exhibition catalogue, father to all subsequent catalogues, collections and exhibitions. Herbert McLean Evans a very distinguished bio-chemist, discoverer of vitamins E (Garrison-Morton 1071), based this exhibition on one of the first collections of these important book which he had collected. During his active career, he built more than one collection of book on the history of sciences and medicine.

History of Colour Photography

323 FARBE IM PHOTO. Die Geschichte der Farbphotographie von 1861 bis 1981. Josef-Haubrich-Kunsthalle Köln 11. Juni bis 2. August 1981. Edited by KLAUS OP TEN HÖFEL and SIEGFRIED GOHR. Numerous illustrations, many of them coloured. 304 pp. 4to. Original coloured pictorial boards.

Köln, 1981. 85.–

WELL DOCUMENTED AND SUMPTUOUSLY ILLUSTRATED exhibition catalogue. This catalogue is much more but a mere exhibition companion, it recommands itself as *A Fundamental Work of Reference* which should be present in any history of photography collection.

324 FERGUSON, JOHN. Bibliotheca Chemica. A bibliography of books on Alchemy, Chemistry and Pharmaceutics. 2 volumes. XXI, 3, 487 pp.; 8, 598 pp. Large 8vo. Original cloth.

London, 1954. 425.–

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Vaduz, Interlibrum, 1983. 65.–

Extensive bibliographical notes. Appeared as catalogue 293/294 in our series: Printing and the Progress of Man, Supplement III. The second part dedicated to Haeckel's contemporaries, his teachers, pupils, critics, contains many milestones of biological sciences. Limited edition, few copies available.

Standard Bibliographie

329 HALLER. – S. LUNDSGAARD-HANSEN-VON FISCHER. Verzeichnis der gedruckten Schriften Albrecht von Hallers. 87, 1 SS. 8vo. Original-Umschlag.

Bern, 1959. 80.–

STANDARD BIBLIOGRAPHIE. Führt 720 Titel mit deren Kollationen an. Wichtige Arbeit, erschienen als No. 18 in der Reihe „Berner Beiträge zur Geschichte der Medizin und Naturwissenschaften". – Gutes Exemplar.

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330 HOOVER COLLECTION. – KUHNER, DAVID & TANIA RITTO. Bibliotheca De Re Metallica. The Herbert Clark Hoover Collection of Mining and Metallurgy. With 32 full page sized illustrations. XX, 219, 3 pp. Large 4to. Original cloth.

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331 JAYAWARDENE, S. A. Reference Books for the Historian of Science. A handlist. XIV, 229 pp. 8vo. Paperback.

London, Science Museum Library, 1982. 60.–

This book is unique in its approach to the relevant literature. In a total of 1034 entried this guide to ref erence books supplements the (alas, not very numerous) bibliographies of the history of science. Indeed, its first section lists those bibliographies, or „guides" as they are here called. A few actual histories of science appear, for reasons not totally clear, among „manuals", but the entries are on the whole works not on the history of science, but those which the practitioner of that art frequently needs and is often at a loss to find. A section on biographies of scientists, for example, includes indexes, bio-bibliographies, biographical dictionaries, and biographical memoirs of learned societies. Substantial attention is given to guides and bibliographies of general and national history, periodical indexes, abbreviations, and other exotica. Of general encyclopedias, with which every researcher thinks himself familiar, Jayawardene lists thirty-five, in English, Dutch, French, German, Italian, Russian, Portugese, and Spanish, and it will be a rare scholar who knows them all. Hardly less rare is the scholar who knows all the publications of International Congresses of the History of Science, which are listed here.

(ISIS vol. 74, 272, June 1983).

332 JESUIT SCIENCE IN THE AGE OF GALILEO. An Exhibiton of Rare books from the History of Science Collection, Linda Hall Library, March 24–July 31, 1986. Illustrated catalogue. 32 pp. Tall-8vo. Original brochure.

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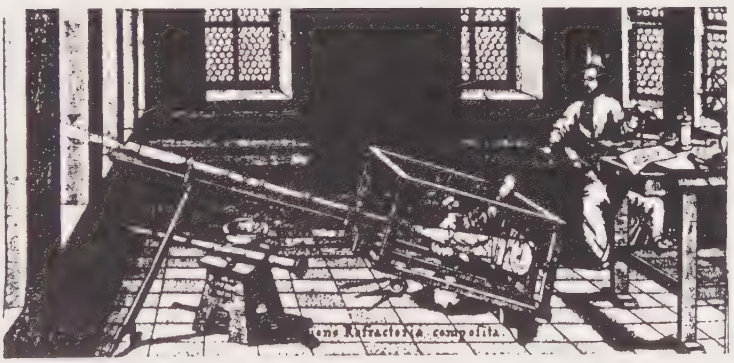

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343 PLANCK, MAX. – MAX PLANCK IN SEINEN AKADEMIE-ANSPRACHEN. Erinnerungsschrift der Deutschen Akademie der Wissenschaften zu Berlin. With a portrait. 6, 204 pp. 8vo. Original wrappers.

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346 POLETTI, I. B. De re dentaria apud veteres sive repertorium bibliographicum, in quo libri omnes de re dentaria ab arte typographica inventa usque ad annum 1800 typis expressis . . . Illustrated. VIII, 126 pp. 8vo. Original printed wrappers.

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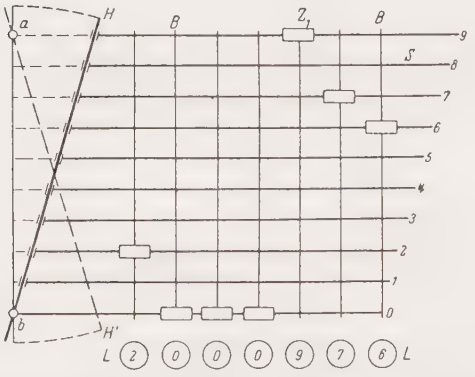

Fig. 3. Maschine mit Proportionalhebel und Zahnstangen.

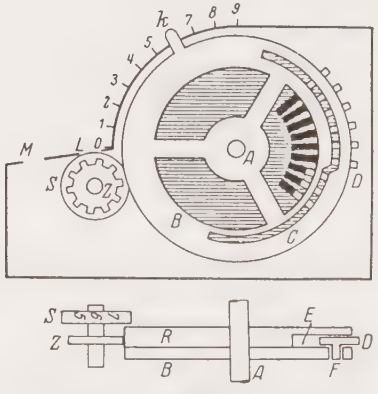

Fig. 4. Sprossenradmaschine.

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Zürich, 1971. 85.–

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352 SCHEUCHZER. – HANS FISCHER. Johann Jakob Scheuchzer (2. August 1672–23. Juni 1733) Naturforscher und Arzt. Mit zahlreichen Abbildungen. 168 SS. 8vo. Orig.-Broschur.

Zürich, 1972. 120.–

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353 SCHMIEDER, KARL CHRISTOPH. Geschichte der Alchemie. Herausgegeben und eingeleitet von Franz Strunz. 28, X, 613, 1 SS. 8vo. Original Pappband mit Rückenschild.

München-Planegg, 1927. 375.–

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